

产品选型手册

PRODUCTS

SELECTION MANUAL

www.zjyndl.com

- | | |
|---------------------------------|-----------------------------------|
| ▶ 复合绝缘子
Composite Insulators | ▶ 隔离开关
Disconnecting switch |
| ▶ 避雷器
Arrester | ▶ 跌落式熔断器
Fused cut out |
| ▶ 防雷保护类
Lightning protection | ▶ 真空断路器
Vacuum circuit breaker |



浙江远能电力科技有限公司，是集科、工、贸于一体的技术型公司。公司专业生产复合绝缘子、氧化锌避雷器、防雷保护类、隔离开关、跌落式熔断器、户外真空断路器等一系列产品。

公司拥有一批高素质的技术设计人员，及一系列先进的加工生产设备，并以最精的工艺、最短的开发周期、最实惠的价格，精心为客户提供全方位的服务。

本公司以科技为先导、技术为龙头、市场为导向的经营理念，长期与客户紧密合作，不断研发新材料、新工艺、新产品，并以完善的管理体系和检测手段，向客户提供高质量的产品和最优质的服务，为客户赢得市场，占得先机。“走向世界，服务全球”是我们永恒的宗旨，远能电力科技有限公司真诚与国内外有识之士携手，共创辉煌的明天。

“真诚合作，以质为本”，为了做得更好，我们认真倾听您之所需和您之所虑。远能电力始终把客户的满意作为工作的中心，我们将在产品、销售、售后服务提供全方位的支持。

Zhejiang Yuanneng Electric Technology Co., Ltd is a technical company integrating science, industry and trade. The company mainly produces compound insulators, zinc oxide arrester, lightning protective devices, isolators, drop-out fuse and outdoor vacuum circuit breaker etc. The company owns high-quality technicians and advanced production and processing devices. We offer our customers all-around services with refined techniques, short development period and favorable price.

With the operation principle of "technology as guide, technology as lead market as orientation", our company has established a long and close cooperation with customers for new materials, new techniques and new products, providing high quality products and excellent services to customers with perfect management system and testing methods. Our goal is "To the world, Serve the globe". We sincerely look forward to cooperation with customers home and abroad for bright future.

"Sincere cooperation, quality oriented", we will sincerely listen to your needs. Yuanneng Electric will make a great effort to satisfy our customers with all-around sales and after-sales services.





跨越·国界

Span Border

企业文化

Corporate Culture

企业理念 Philosophy

创造完美、服务用户、关怀员工、奉献社会
create a perfect, service users, care staff, contribute to society

公司宗旨 Tenet

专业、真诚、高效、创新
professional, sincere, efficient and innovative

经营方针 Policy

内强素质、外塑形象、树立品牌、规模成长
quality, image, brand, growth

质量方针 Quality Policy

质量第一、技术先进、稳步发展、用户满意
high quality, advanced technology, steady development, customer satisfaction



企业口号：

开心工作，快乐生活。企业辉煌，因为有我。

Enterprise slogan:

Work happily, live a fun life. That's me who contribute the effort to company's success.

校企合作：

同心同德，团结拼搏，精诚合作，携手共进，创造价值，培养人才。

Cooperation between school and enterprise:

Unity, Struggle, Cooperation, Hand in hand, Creation of Value, Talents.



生产设备 ▶

Production equipment

◀ 生产及检测设备

Production and testing equipment

远能高品质的产品与其严格的质量控制体系息息相关。远能依据先进的质量管理体系及 ISO9001:2000 质量管理体系, 引进先进的检测设备, 将质量检测与每一工序、每一岗位环环相扣, 来料检验、每一岗位的过程控制、成品出库检验与顾客的质量反馈信息相结合的过程质量控制体系, 以质量促发展的观念已切切实实扎根在每一位远能人的心中。

High quality products have a close relationship with strict quality control system. With advanced quality control system, ISO9001:2000 quality management system and advanced testing equipment, Yuanneng Electric has inspection for every process from material warehouse-in inspection to finished product warehouse-out inspection, as well as the feedback system from customer.



▲ 仓库

Warehouse

公司始终依靠提供最完美的产品和服务来追求客户的满意, 采用科学的管理体系和营销网络接轨国际, 围绕“以观念创新为先导、以战略创新为基础、以组织创新为保障、以技术创新为手段、以市场创新为目标”的五大创新战略, 引领着远能从小到大, 从中国走向世界, 持续地成长。致力于通过提高质量和完善服务, 不断地提高客户满意度, 建立并维护一种互惠互利的伙伴关系。

Our company always makes a great effort for perfect product and service, we adopt scientific management system and marketing network to be in line with the globe. With the five creation strategy----idea innovation guided, strategy innovation based, organizational innovation guaranteed, technology innovation as method, marketing innovation as target, Yuanneng Electric is committed herself to establishing and maintaining a mutual benefit partner relationship with customers by high quality, perfect service and high satisfaction.



办公区 ▶

Work Area

NETWORK

销售网络》

远销欧洲北美洲
中东中亚日本
东南亚非洲
澳大利亚
美国、俄罗斯
非洲等地区

Exported to Europe, North America
Middle East and Central Asia Japan
Southeast Asia, Africa
Australia
U.S., Russia
Africa and other regions



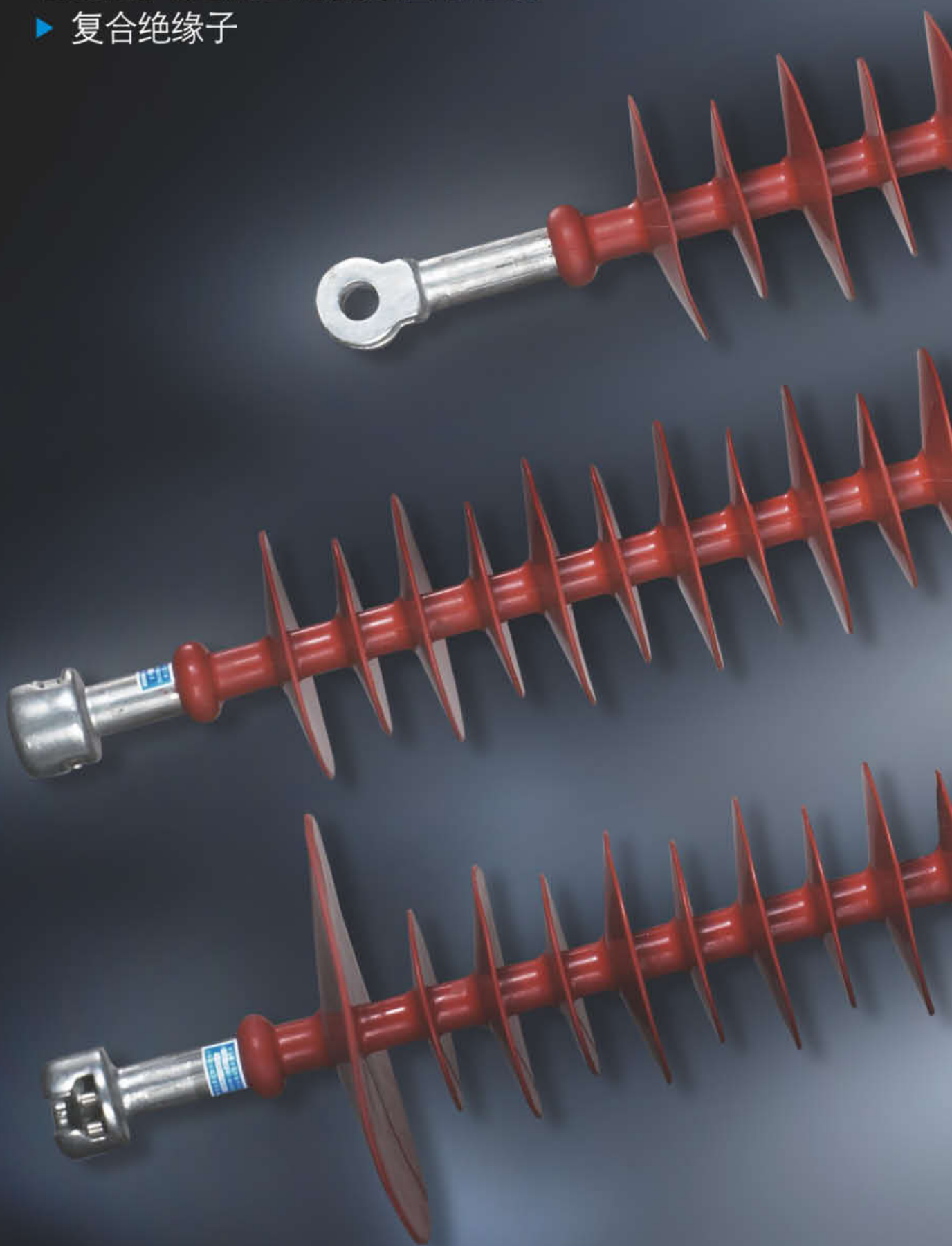


ATTENTION ACROSS
THE DEVELOPING WORLD
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COMPOSITE INSULATOR

▶ 复合绝缘子



复合绝缘子 Composite Insulator

概述 Product Structure

复合绝缘子由环氧树脂玻璃纤维引拔棒、硅橡胶伞裙以及两端的连接金具三个部分组成。

环氧树脂玻璃纤维引拔棒是复合绝缘子的骨架，起着支撑伞裙、内绝缘、联接两端金具、以及承受机械负荷等多重作用，具有很高的抗张强度，一般可达600Mpa以上，是普通钢材的2倍，瓷材料的5~8倍，并具有良好的介电性能和耐化学侵蚀性，还有良好的抗弯曲疲劳，抗蠕变和抗冲击性。硅橡胶伞裙主要起着保护芯棒，遮挡雨雪，增大爬电距离和产品外绝缘的作用，是以高分子聚合物硅橡胶为基体，辅以阻燃剂，抗老化剂，偶联剂等填料经高温高压硫化而成，具有良好的憎水性和迁移性，以及良好的耐腐蚀，耐老化，电绝缘等性能。并且具有很高的污闪电压和耐电性能，电压分布均匀，与瓷相比其在同等条件下闪络电压是瓷的2倍以上。

硅橡胶伞裙采用高压全密封整体注射工艺，从而解决了影响复合绝缘子可靠性最关键的问题——界面电气击穿。金具与玻璃纤维棒的联接采用国际上最先进的电脑控制同轴恒压压接工艺，并配有全自动声发射探伤检测系统，保证了金具与芯棒的联接的可靠性与稳定性。芯棒采用ERC高温耐酸棒，芯棒与硅橡胶界面涂有特种偶联剂。先进的生产设备和制造工艺，齐全的检测设备及检测手段，保证了产品的各项技术指标均达到相关的国内和国际标准，成为高电压输电线路的新一代绝缘子。

The composite silicone insulators are constituted by 3 main elements:

1. Central rod in ECR fiberglass (corrosion resistant) impregnated with epoxy resin or polyester resin.
2. Coating in silicone rubber that protects the central rod from external factors (humidity, chemical contamination, and so on.).
3. External metal end fittings that are used to transmit the mechanical stresses of the electric line to the central rod. As the silicone rubber shed is made with the high-pressure full-seal injection technology, the key problem-interface electric breakdown that influences the reliability of composite insulator is fully solved. Connection of the fiberglass rod and metal fittings, adopts the pressure welding technique which have the international advanced level, and have the full automatic sound wave detection of defects system, high intension, beautiful outline, small volume, light weight and the metal fitting of galvanization if of corrosion-proof and can be exchanged used with porcelain insulator, this product have reliable structure, core rod cannot damage easily, and take full advantage of the mechanical strength.

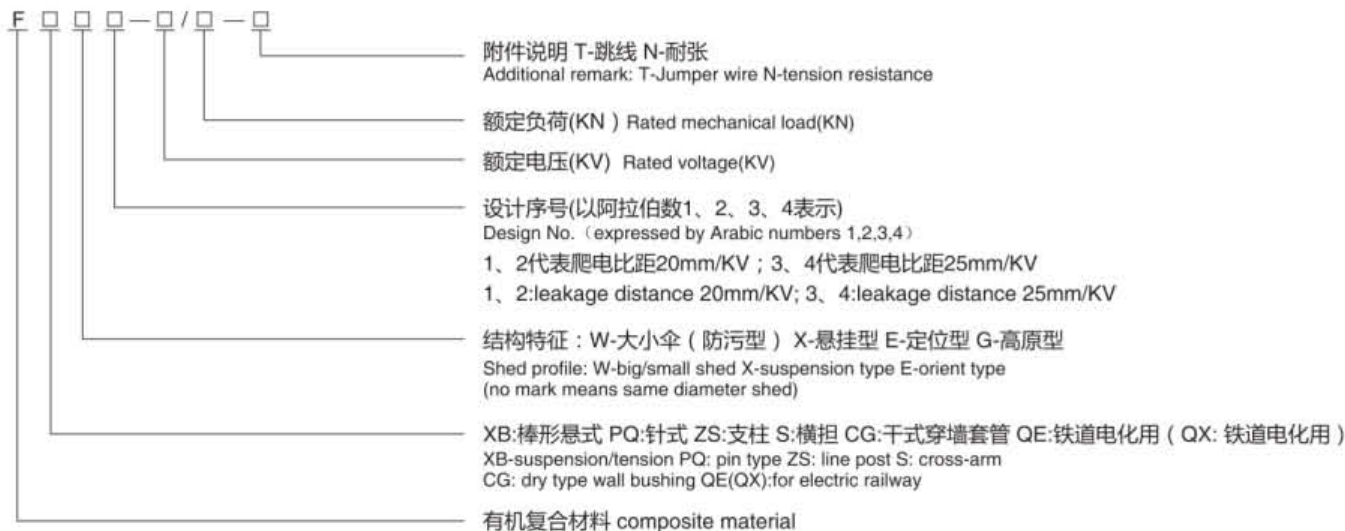
复合绝缘子产品类型 Type Of Composite Insulator

FXBW	棒型悬式复合绝缘子 FXBW-composite suspension or tension insulator
FPQ	复合针式绝缘子 FPQ- composite pin insulator
FZSW	复合支柱绝缘子 FZSW-composite line post insulator
FS	复合横担绝缘子 FS-composite cross-arm insulator
FCGW	复合干式穿墙套管 FCGW-composite dry wall bushing
FQE(X)	电气化铁道用复合绝缘子 FQE(X)-composite insulator for electric railway

使用条件 Service Conditions

环境温度：-40℃~+40℃ Ambient temperature: -40℃~+40℃
 海拔高度：不超过1500米 Altitude: ≤1500M
 交流电源频率：不超过100HZ AC power supply Frequency: ≤100HZ
 最大风速：不超过35m/s max wind speed: ≤35 m/s
 地震强度：不超过八级 earthquake intensity: ≤8 grade

产品型号说明 Mode Description



产品性能 Product Performance

电气性能优越，机械强度高，内部承载的环氧玻璃纤维引拔棒抗张抗弯强度比普通钢材高2倍，是高强度瓷材料的8-10倍，有效提高了安全运行的可靠性。

耐污性能好，抗污闪能力强，其湿耐受电压和污秽耐受电压为相同爬距瓷绝缘子的2-2.5倍，且不需清扫，能在重污秽地区安全运行。

体积小，重量轻（仅为同电压等级瓷绝缘子的1/6-1/9），结构轻巧，便于运输和安装。

硅橡胶伞裙具有良好的憎水性能，其整体结构保证了内绝缘不受潮，不需进行预防性绝缘监测试验，不需清扫，减少了日常维护工作量。

密封性能好，耐电蚀能力强，伞裙材料耐漏电起痕达TMA4.5级水平，具有良好的耐老化、耐腐蚀、耐低温性能，可适用于-40℃- +50℃地区。

具有很强的抗冲击性和防震性能，其良好的防脆性和抗蠕变性，不易破碎、抗弯曲、抗扭强度高，可承受内部压强，防爆力强，可与瓷、玻璃绝缘子互换适用。

复合绝缘子系列产品，其机械性能和电气性能均优于瓷绝缘子，运行安全裕度大，是电力线路用的更新产品。

Good electrical specification, strong mechanical strength, tensile bending intension of the epoxy glass fiber rod of internal load bearing is double than normal rolled products,8-10 times of high strength porcelain material, can effectively improve the reliable of safe operation.

Fine anti-pollution, strong prevent flash accident, and the wet withstand voltage and pollution withstand voltage is 2-2.5 times than the same creepage distance porcelain insulator, and not to clean up ,can safe operate in the serious pollution areas.

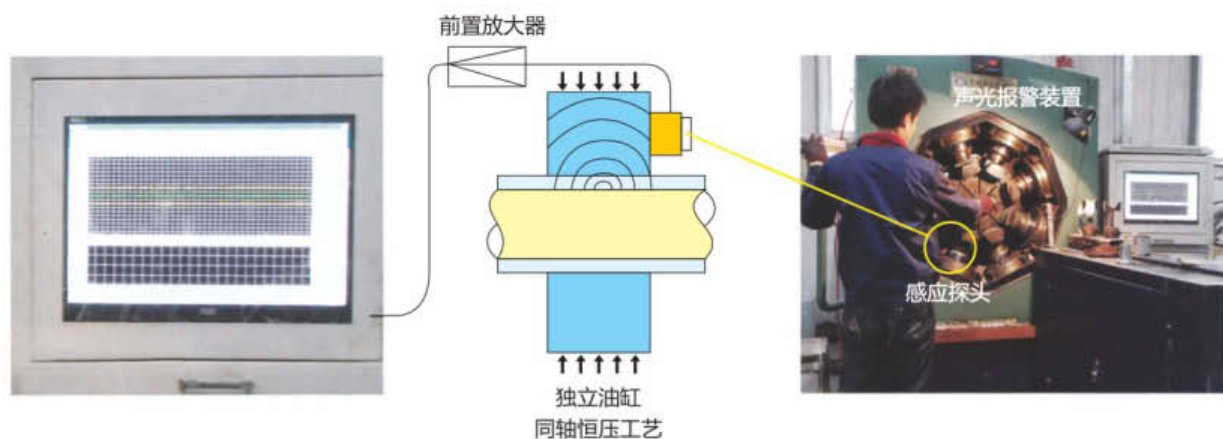
Small volume, light weight (only 1/6-1/9 of the same voltage grade of porcelain insulator), lightness structure, and it are easy for transportation and installation. The shed has favorable waterproof performance which the whole structure assures the internal insulation is not wet, not needs to test of prevent insulation and clean up, to reduce the routine maintenance work capacity.

Good sealing performance, strength anti-electrolytic corrosion ,the shed has good anti-ageing, corrosion, proof, performance and the level is TMA4.5 class , is applied to -40 ℃- +50℃ areas .They have strong resistance to impact and quakeproof performance ,good brittle resistance and creep resistance, unbreakable ,anti-bend ,high anti-bend strength ,loading internal force and strong explosion proof, can exchange use of porcelain ,glass insulator each other.

Composite insulator series products, which the mechanical performance and electric performance are better than porcelain insulator, and the tolerance of safe operation is big, and it is the renew product for electric power line.

金具压接监控技术

金具压接过程采用声发射探测技术监控，此技术以前只用于航天航空领域的科研试验，其灵敏度可分辨几根玻璃纤维的断裂，并有声光报警装置确保压接质量万无一失。并采用先进的同轴恒压技术，与行程定位控制相比，能克服因金具大小误差造成的压接质量不稳定，是目前世界最先进的压接方法



优越的伞套特性

优良的硅橡胶配方，先进的一次性成型技术和二次硫化工艺，使产品与传统的陶瓷绝缘子相比具有不可替代的优越性。



抗雷电冲击



防污



雾中安全运行



优良憎水性

复合绝缘子生产工艺流程 Production Technological Process Of Composite Insulator

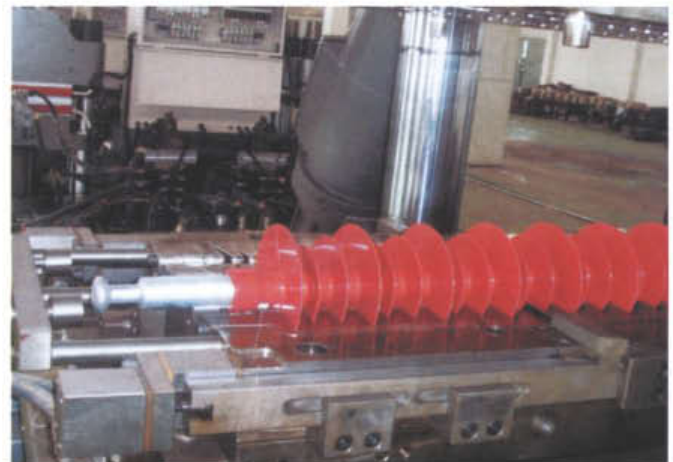
- A** 金具清洗烘干芯棒打磨
Cleaning fittings, drying the core rod and polishing
- B** 压接连接
Crimping connection
- C** 脱脂预热涂偶联剂
Degreasing, preheating and coating with coupling agent
- D** 整体注射密封成型
Integral injection seal molding
- E** 外观检查整修
Appearance examination and renovation
- F** 二次硫化
Additional vulcanization
- G** 产品出厂试验、抽样检验
Delivery test and sampling test
- H** 合格产品上铭牌
Mounting the nameplate in the qualified products
- I** 产品包装入库
Packing and placing the products in store



压接 Crimping



模压硫化 Molding & sulfuration



注射硫化 Injection & sulfuration

绝缘子质量保证体系 Quality Guarantee System For Insulator



精良的设备，保证工艺与质量需求！
Superior equipment, meeting the demands of technology and quality!
优良的产品，让用户永远放心满意！
First-class products, satisfied by customers for ever!

原材料进厂检验项目 Raw material incoming inspection item

芯棒 Core rod

1. 强光检验（全检）；
Strong light examination (full examination);
2. 吸红、水扩散试验；（抽检）
Slight porosity and water spreading test; (sampling inspection)
3. 工频耐受试验（全检）；
Power frequency withstand test (full examination)
4. 拉伸破坏负荷测试 Tension failure load test

金具 Fitting

1. 锌层测量
Zinc coating measurement
2. 通规、止规检查
Go/no-go inspection

混炼胶 Compounded stock

1. 硬度
Hardness
2. 漏电流起痕和电蚀损性能
Leakage tracking and electrical erosion property
3. 介电常数测定
Dielectric constant test

锁紧销 Locking pin

1. 锁紧销操作试验
Operation test of locking pin



产品逐支出厂检验项目 Product one-by-one delivery inspection item

产品逐支出厂检验项目

Product one-by-one test item

1. 外观检查
Appearance inspection
2. 50%额定机械负荷耐受10S试验
Test of withstanding at 50% of rated mechanical for 10s
3. 工频耐受电压试验
Power frequency withstand voltage test



产品抽样检验项目 Product sampling inspection item

1. 尺寸及爬电距离检验
Dimension and creepage distance inspection
2. 锌层
Zinc coating
3. 锁紧销操作试验
Operation test of locking pin
4. 100%额定机械负荷耐受1min试验
Test of withstanding 100% of rated mechanical load for 1 min
5. 陡波冲击试验
Steep wave impulse test

棒形悬式复合绝缘子 Composite Suspension Insulator

概述 General

本产品尤其适用于污秽地区、高机械拉伸负荷、大跨度和紧凑型线路。具有重量轻、体积小、不易破碎、弯曲、抗扭强度高，防暴性能强等优点。

This product is special for badly polluted areas, high mechanical tension load, long span and compact power line. And have features of light weight, small volume, unbreakable, anti-twist and strong explosion protection.

产品结构 Product Structure

伞裙设计采用独特的空气动力学原理。
The design of shed adopted unique aerodynamics principle.

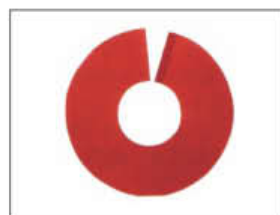
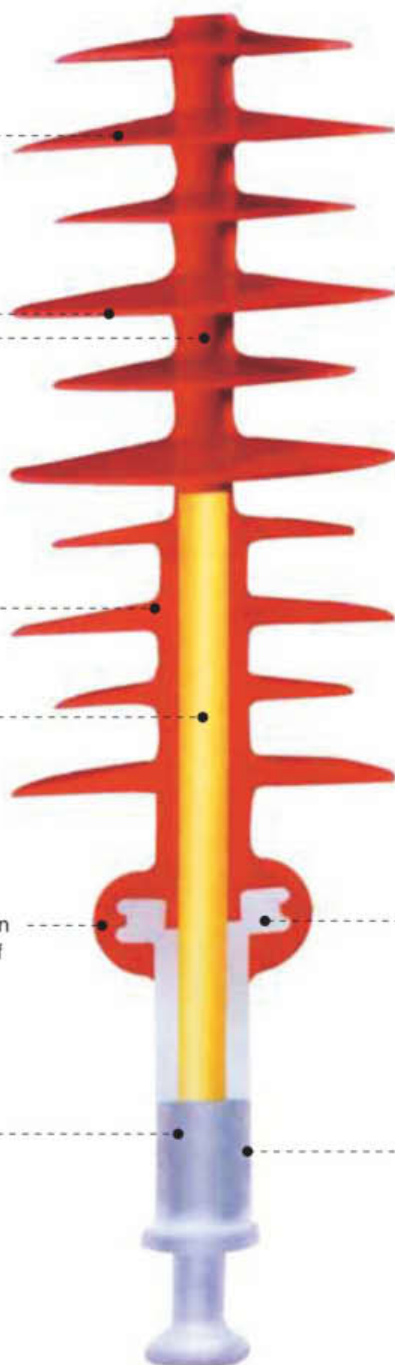
伞裙与护套采用整体成型技术。
The shed and sheath adopted the whole moulding technique.

护套厚度 $\geq 5\text{mm}$,厚度一致符合国际IEC标准。
Sheath thickness accord with the IEC international standard.

采用ERC高温加强型耐酸芯棒。
Adopt ERC high-temperature fortified acid-proof model core rod.

端部密封采用高温硫化胶高压密封技术，达到三层防护目的。使金具端部密封性能可靠。
The end seal adopted the high temperature sulfuration high pressure seal technique, to achieve the aim of three-protection, to ensure the end seal of metal fitting is reliable performance.

金属连接采用国际先进的压接工艺。
Adopt international advanced compaction joint technique for metal fitting connection.



优质原材料生产的产品，其憎水性可达到HC1级水平。
Excellent original material manufacture of products. Which the hydrophobicity can reach to Hc1 level.



独特的金具开槽设计，且开槽厚度一致，杜绝尖端放电。
The unique notch design of metal fitting & same thickness of notch, prevent top end discharge.

金属镀锌层采用稀土铝热镀锌技术，避免了压按时锌层脱落。
The galvanizing coat of metal fitting adopt the technique of rare earth aluminum hot galvanizing, to avoid the zinc continue drop out during compaction joint.

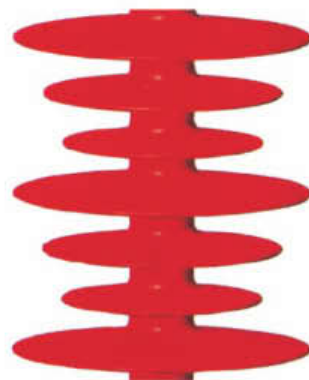
产品型号说明 Mode Description



注：连接金具可根据用户需要进行自由组合

Note: The connected to hardware may carry on free recombination according to the user need

复合悬式绝缘子伞形特点介绍 Composite suspension insulator



FXBW-型 Type FXBW

特点：大小伞，伞间距适中，标准结构高度时适用于多雨水的三级污秽地区。

Feature: L-S shed, proper shed gap, standard structure height, suitable for rainy and class 3 pollution area.

FXBG-型 Type FXBG

特点：大小小伞型，伞间距适中，标准结构高度时适用北方地区，有效防止覆水闪络。

Feature: L-S-S shed, proper shed gap, standard structure height, suitable for northern area, preventing the icing flashover effectively.

FXBWG-型 Type FXBWG

特点：大中小伞型，伞间距密，标准结构高度时适用于重污秽四级地区。

Feature: L-M-S shed, close shed gap, standard structure height, suitable for class 4 pollution area.

备注：

伞形，以及伞的尺寸可以根据每次客人的不同需求而特殊设计。因为同一高度的绝缘子也可以由设计不同的伞径或者伞的数量，而满足不同或大或小的爬电距离的需求。这样我们可以获得更高的防污等级的产品。

Note:

Shapes, dimensions can agree every time, according to the customer's need too. There are many models because according to the kind of Insulator there is a bigger or smaller leakage distances in the same total height. The alternating shape of the sheds allows to obtain very good resistance to the pollution.

棒形悬式复合绝缘子 Composite Suspension Insulator



技术参数表 Main technical parameters

型号 Type	额定 电压 Rated voltage (kV)	额定机械 拉伸负荷 Rated mechanical tensionload (kN)	连接 标记 结构 Structure of coupling marks	结构 高度 H Structure height (mm)	最小电 弧距离h Min Electricarc distance (mm)	最小公称 爬电距离 Minnominal creepage distance (mm)	雷电全波冲击 耐受电压(峰值) 不小于 Full wave lightning impulse withstand voltage(peak value) not less than (kV)	工频1min;湿耐 受电压(有效值) 不小于 1min power frequency wet withstand voltage not less than (kV)
FXBW3-10/70	10	70	16	410±15	200	500	95	55
FXBW3-10/100	10	100	16	450±15	200	500	95	55
FXBW4-10/70	10	70	16	365±15	192	510	95	55
FXBW4-10/100	10	100	16	405±15	192	510	95	55
FXBW4-20/70	20	70	16	470±15	280	750	170	75
FXBW4-20/100	20	100	16	500±15	280	750	170	75
FXBW4-20/120	20	120	16	500±15	280	750	170	75
FXBW4-35/70	35	70	16	606±15	410	1280	230	95
FXBW4-35/100	35	100	16	646±15	424	1280	230	95
FXBW4-35/120	35	120	16	646±15	424	1280	250	95
FXBW4-66/70	66	70	16	806±15	650	2130	410	185
FXBW4-66/100	66	100	16	846±15	650	2130	410	185
FXBW4-66/120	66	120	16	886±15	650	2130	410	185
FXBW4-110/70	110	70	16	1180±15	1005	3150	550	230
FXBW4-110/100	110	100	16	1240±15	1005	3150	550	230
FXBW4-110/120	110	120	16	1260±15	1005	3150	550	230
FXBW4-110/160	110	160	20	1300±15	1050	3600	550	230
FXBW4-220/70	220	70	16	2075±30	1905	6300	1000	395
FXBW4-220/100	220	100	16	2115±30	1905	6300	1000	395
FXBW4-220/120	220	120	16	2240±30	2000	6600	1000	395
FXBW4-220/160	220	160	20	2240±30	1905	6900	1000	395
FXBW4-330/100	330	100	16	2990±40	2600	9500	1425	570
FXBW4-330/120	330	120	16	2990±40	2600	9500	1425	570

型号 Type	额定电压 Rated voltage (kV)	额定机械拉伸负荷 Rated mechanical tensionload (kN)	连接标记结构 Structure of coupling marks	结构高度 H Structure height (mm)	最小电弧距离 h Min Electric arc distance (mm)	最小公称爬电距离 Minnominal creepage distance (mm)	雷电全波冲击耐受电压(峰值) 不小于 Full wave lightning impulse withstand voltage(peak value) not less than (kV)	工频1min湿耐受电压(有效值) 不小于 1min power frequency wet withstand voltage not less than (kV)
FXBW4-330/160	330	160	20	2990±40	2600	9500	1425	570
FXBW4-330/240	330	240	20	3050±40	2600	9500	1425	570
FXBW4-500/100	500	100	16	4450±50	4000	14500	2250	740
FXBW4-500/120	500	120	16	4450±50	4000	14500	2250	740
FXBW3-500/160	500	160	20	4030±50	3650	13750	2050	740
FXBW4-500/160	500	160	20	4450±50	4000	15000	2250	740
FXBW4-500/300	500	300	24	4340±50	3650	13750	2050	740
FXBW4-500/400	500	400	28	4450±50	4000	15000	2250	740
FXBW4-750/160	750	160	20	6650±50	6000	21600	2700	1125
FXBW4-750/210	750	210	20	6650±50	6000	21600	2700	1125
FXBW4-750/240	750	240	20	6650±50	6000	21600	2700	1125
FXBW4-750/300	750	300	24	6650±50	6000	21600	2700	1125
FXBW4-750/400	750	400	28	6650±50	6000	21600	2700	1125

FXBG型

型号 Type	额定电压 Rated voltage (kV)	额定机械拉伸负荷 Rated mechanical tensionload (kN)	结构高度 H Structure height (mm)	最小电弧距离 h Min Electric arc distance (mm)	最小公称爬电距离 Minnominal creepage distance (mm)	雷电全波冲击耐受电压 (峰值) 不小于 Full wave lightning impulse withstand voltage (peak value) not less than (kV)	工频1min湿耐受电压 (有效值) 不小于 1min power frequency wet withstand voltage not less than (kV)
FXBG-66/70	66	70	860±15	700	2020	460	195
FXBG-66/100	66	100	900±15	700	2020	460	195
FXBG-66/120	66	120	940±15	700	2020	460	195
FXBG-110/70	110	70	1400±15	1227	3980	550	230
FXBG-110/100	110	100	1455±15	1227	3980	550	230
FXBG-110/120	110	120	1490±15	1227	3980	550	230
FXBG-110/160 20R	110	160	1490±15	1227	3980	550	230
FXBG-220/70	220	70	2430±30	2250	6800	1000	395
FXBG-220/100	220	100	2470±30	2250	6800	1000	395
FXBG-220/120	220	120	2510±30	2250	6800	1000	395
FXBG-220/160 20R	220	160	2600±30	2300	6900	1000	395

订货须知：1、默认的悬式绝缘子两端金具为球头球窝结构，如有不同请注明类型，具体代号请查看终端金具表格。

安装注意事项 Installation Instruction

- 1、绝缘子运输及安装中应轻拿轻放，不应投掷，并避免与各类杂件（导线、铁板、工具等）及坚硬物碰撞、摩擦；
 - 2、复合绝缘子起吊时，绳结要打在端部附件上，严禁打在伞裙或护套上，绳子必须碰及伞裙与护套部分时，应在接触部分用软布包裹；
 - 3、不得将复合绝缘子当作放（收）线的辅助工具，以免使其受到冲击力或弯矩而损伤绝缘子；
 - 4、严禁脚踩绝缘子伞裙；
 - 5、安装均压环时，应注意调整，使环与绝缘子轴线垂直，对于开口型均压环，注意两端开口方向一致，以利于放电，保护伞裙；
- Note:
- 1.The transportation and installation of the insulator shall be taken Good care without any throwing or collision, fiction with various sundries (wires, iron plates and tools etc.)and solid material.
 - 2.When suspending the composite insulator, the knot shall be made on the attachment at the end. Knots on shed or sheath are strictly prohibited. When the rope has to be contacted with the shed or sheath, the contacting area shall be packed with soft cloths.
 - 3.Never apply the composite insulator as the assistant tool for the wire distribution and collection and collection in case that the insulator can be damages by impact or bending moment.
 - 4.Do not step on the insulator shed with foot.
 - 5.When installing the grading ring, attention shall be attached on the adjustments to make sure that the ring is vertical with the axial of the insulator. And for opening grading ring, the opening directions at both ends shall be consistent to facilitate the discharging and protect the shed.

出口型复合悬式绝缘子 Composite Suspension Rod Insulators (Export Type)



技术参数表 Main technical parameters

型号 Type	额定电压 Rated voltage (kV)	额定机械负荷 Rated mechanical load (kN)	结构高度 H(mm) Structure height (mm)	绝缘距离 H insulating distance (mm)	最小公称爬电距离 Min nominal creepage distance (mm)	伞径 Diameter of shed (mm)	工频1min湿耐受电压(有效值) 1min power frequency wet withstand voltage (kV)	标准雷电全波冲击耐受电压 Full wave lightning impulse withstand voltage (kV)
FXB-12/70CT	12	70	309±10	143	450	Φ 100	42	105
FXB-12/100CT	12	100	350±10	143	450	Φ 100	42	105
FXB-15/70CE	15	70	356±10	190	450	Φ 100	65	145
FXB-15/70CT	15	70	356±10	190	450	Φ 100	65	145
FXB-21/70CT	21	70	405±10	237	550	Φ 100	70	150
FXB-24/70CT	24	70	450±10	277	660	Φ 100	70	155
FXB-24/100ST	24	100	490±10	277	660	Φ 100	70	155
FXB-24/120SB	24	120	500±10	277	660	Φ 100	70	155
FXB-33/70CT	33	70	500±10	330	908	Φ 100	85	170
FXB-36/70CT	36	70	544±10	360	990	Φ 100	95	230
FXBW-36/70SB	36	70	621±15	410	1200	Φ 144/Φ 114	95	230
FXBW-36/100CT	36	100	615±15	410	1200	Φ 144/Φ 114	95	230
FXBW-66-70/SB	66	70	806±15	650	2130	Φ 146/Φ 116	185	410
FXBW-66-120/SB	66	120	860±15	650	2130	Φ 146/Φ 116	185	410
FXB-110/120SB	110	120	1220±15	1005	3150	Φ 146/Φ 116	230	550
FXB-110/160SB	110	160	1300±15	1005	3150	Φ 146/Φ 116	230	500

安装注意事项 Installation Instruction

- 1.绝缘子运输及安装中应轻拿轻放，不应投掷，并避免与各类杂件（导线、铁板、工具等）及坚硬物碰撞、摩擦；
- 2、复合绝缘子起吊时，绳结要打在端部附件上，严禁打在伞裙或护套上，绳子必须碰及伞裙与护套部分时，应在接触部分用软布包裹；
- 3、不得将复合绝缘子当作放（收）线的辅助工具，以免使其受到冲击力或弯矩而损伤绝缘子；
- 4、严禁脚踩绝缘子伞裙；

5、安装均压环时，应注意调整，使环与绝缘子轴线垂直，对于开口型均压环，注意两端开口方向一致，以利于放电，保护伞裙；

Note:

1.The transportation and installation of the insulator shall be taken good care without any throwing or collision, fiction with various sundries(wires, iron plates and tools etc.)and solid material.

2.When suspending the composite insulator, the knot shall be made on the attachment at the end.Knots on shed or sheath are strictly prohibited. When the rope has to be contacted with the shed or sheath, the contacting area shall be packed with soft cloths.

3.never apply the composite insulator as the assistant tool for the wire distribution and collection and collection in case that the insulator can be damages by impact or bending moment.

4.Do not step on the insulator shed with foot.

5.when installing the grading ring,attention shall be attached on the adjustments to make sure that the ring is vertical with the axial of the insulator. And for opening grading ring, the opening directions at both ends shall be consistent to facilitate the discharging and protect the shed.

加强型特大伞复合悬式绝缘子 Insulator With Reinforced XL Shed

为了防止鸟害和积雪冰凌形成绝缘子闪络而采用第一片伞裙加大设计的，在近几年的运行中被证明是十分有效的，但由于硅橡胶材料比较柔软，当特大伞在积雪较厚的情况下容易向下变形，减弱了其对下面伞裙的防护作用，容易造成绝缘子闪络。我公司为此成功开发了带加强筋的特大伞，通过在大伞上设有的四条从中心向四个方向辐射的棱状突起的加强筋，有效地加强了特大伞强度，可适用于风雪较大的环境中。

The company has taken the actual environmental needs in to account and developed ultra large shed insulator flashover to prevent the composite insulator from being affected by snow, ice edges and bird damage etc. and avoid the insulation caused.



技术参数表 Main technical parameters

型号 Type	加强筋 特大伞径 XL shed diameter (mm)	额定 电压 Rated voltage (kV)	额定机械 负荷 Rated mechanical load (kN)	连接标 记结构 Structure of coupling marks	结构 高度 H Structure height (mm)	绝缘 距离 H insulating distance (mm)	最小公称 爬电距离 Minnominal creepage distance (mm)	雷电全波冲击 耐受电压(峰值) 不小于 Full wave lightning impulse withstand voltage(peak value) not less than (kV)	工频1min湿耐 受电压(有效值) 不小于 1min power frequency wet withstand voltage not less than (kV)
FXBW4-35/70TDI	250	35	70	16	606±15	424	1330	230	95
FXBW4-35/100TDI	250	35	100	16	646±15	424	1330	230	95
FXBW4- 66/70TDI	250	66	70	16	806±15	650	2230	410	185
FXBW4- 66/100TDI	250	66	100	16	846±15	650	2230	410	185
FXBW4- 110/70TDI	250	110	70	16	1180±15	1005	3200	550	230
FXBW4- 110/100TDI	250	110	100	16	1240±15	1005	3200	550	230
FXBW4- 220/100TDI	250	220	100	16	2115±15	1905	6400	1000	395
FXBW4- 220/210TDI	250	220	210	20	2240±30	1905	6400	1000	395
FXBW4- 330/100TDI	250	330	100	16	2990±40	2600	9600	1425	570
FXBW4- 330/160TDI	250	330	160	20	2990±40	2600	9600	1425	570
FXBW4- 330/210TDI	250	330	210	20	2990±40	2600	9600	1425	570
FXBW4- 110/70TDII	300	110	70	16	1200±15	1000	3300	550	230
FXBW4- 110/100TDII	300	110	100	16	1240±15	1000	3300	550	230
FXBW4- 220/100TDII	300	220	100	16	2240±30	2000	6500	1000	395
FXBW4- 220/210TDII	300	220	210	20	2240±30	1900	6500	1000	395
FXBW4- 330/100TDII	300	330	100	16	2990±40	2600	9600	1425	570
FXBW4- 330/160TDII	300	330	160	20	2990±40	2600	9600	1425	570
FXBW4- 330/210TDII	300	330	210	20	2990±40	2600	9600	1425	570

技术参数表 Main technical parameters

型号 Type	加强筋特大伞径 XL shed diameter(mm)	增加爬电距离(mm) Increasing Creepage distance
FXBW(G)-□/□TD I	250	100
FXBW(G)-□/□TD II	300	150
FXBW(G)-□/□TD III	400	250

注：产品型号后加字母 TD 代表绝缘子第一片采用加强型特大伞，产品结构高度和绝缘距离与原有型号相同,电气性能优于原参数。型号后附加的罗马字母代表不同直径的伞型，I：φ250, II：φ300, III：φ400。

Note：the model with TD represents the first piece of insulator shed adopt the reinforced XL shed, the structure height and insulation distance is the same with the original model of products, but the electric performance is superior than before, and the "I II III" represents the sheds of different diameters.

绝缘子均压环 CORONA RINGS

概述 General

均压环可改善电压分布，同时在闪路时通过环对地放电，可起到保护伞套不被电弧灼的作用，而缓解带电端伞套的老化，一般情况下，66KV 及以下电压等级产品可不带均压环；110kv 的产品高压端带一个均压环，但在多雷区建议两端配均压环；220kv 及以上电压等级产品高压端和接地端各带一个均压环。请在订货时注明均压环的配法。

The grading ring can improve the voltage distribution and meanwhile discharge to earth when the flashover is passing through to protect the shed from being burnt by the electric arc and thus release the aging of shed at the live end. Generally, products with the voltage grade of 66KV or under are not provided with grading rings; and for 110KV, 1 grading ring is provided while it is recommended to equip two rings at the both ends in areas where lightning is quite often; At the high voltage end and earthing end of products with voltage grade of 220KV or over, 1 grading ring is provided at both ends. Please indicate the arrangement of the grading ring when putting the order.



(管制)

闭口均压环
Closing grading ring



(压铸式)



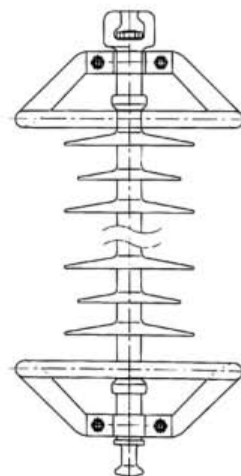
(压铸式)

开口均压环
opening grading ring

常规均压环 Corona rings

选型表 Main technical parameters

产品型号 (闭口型) CORONA RINGS type (closing type)	产品型号 (开口型) CORONA RINGS type (opening type)	环径 Ring diameter	适用范围 Intensity Grade KN
FJH-110/100	FJHK-110/100	φ 250	70kN/100kN
FJH-110/160	FJHK-110/160	φ 250	160kN/210kN
FJH-220/100	FJHK-220/100	φ 250/ φ 305	70kN/100kN
FJH-220/160	FJHK-220/160	φ 250/ φ 305	160kN/210kN
FJH-330/100	FJHK-330/100	φ 400	70kN/100kN
FJH-330/160	FJHK-330/160	φ 400	160kN/210kN
FJH-500/100	FJHK-500/100	φ 400	70kN/100kN
FJH-500/160	FJHK-500/160	φ 400	160kN/210kN



防鸟害均压环 Anti-birds' droppings composite corona rings

选型表 Main technical parameters

产品型号 CORONA RINGS Type	伞径 Shed diameter	安装内径 Clip Diameter	适用范围 Intensity Grade KN
FJH-110/100FN	φ 250	φ 29	70kN/100kN
FJH-110/160FN	φ 250	φ 36	160kN/210kN
FJH-220/100FN	φ 305	φ 29	70kN/100kN
FJH-220/160FN	φ 305	φ 36	160kN/210kN
FJH-330/100FN	φ 400	φ 29	70kN/100kN
FJH-330/160FN	φ 400	φ 36	160kN/210kN

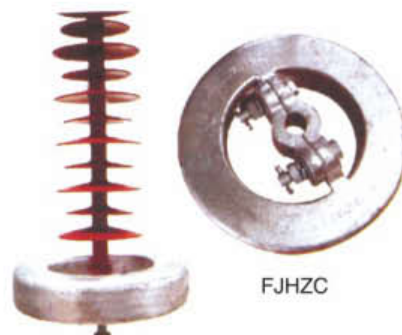


防鸟害均压环

重锤均压环 Weight dropper corona rings

选型表 Main technical parameters

产品型号 CORONA RINGS Type	环径 Ring diameter	适用范围 Intensity Grade KN	重量 Weight kg
FJHZC-15/100	φ 250	70kN/100kN	5
FJHZC-15/160	φ 250	160kN/210kN	15
FJHZC-27/100	φ 305	70kN/100kN	27
FJHZC-27/160	φ 305	160kN/210kN	27
FJHZC-40/100	φ 405	70kN/100kN	40
FJHZC-40/160	φ 405	160kN/210kN	40
FJHZC-40/300	φ 405	300kN	40



FJHZC

注：重锤均压环运用于悬式绝缘子中，可以在改善端部电场分布的同时，有效降低绝缘子横向振动的固有频率和幅值，适用于西、北部强风沙地区和山谷风口使用，但不适用耐张绝缘子串上。

Note : The Weight dropper corona rings used in the suspension insulator, it can not only improve the electric field distribution of terminal parts, but also effectively lower the natural frequency and the amplitude of the transverse vibration of the insulator. This kinds of insulator is applicable in the strongly wind and sandy areas in the western and northern of China and the gaps of the valleys, but not suitable the Composite Tension Insulator String.

重锤均压环

复合防风偏绝缘子 Anti-wind Composite Insulator

概述 General

35KN、66KN、110kN、220kN防风偏复合系列产品适用于高压线路硬跳线用，能有效的防止跳线风偏，导线随风舞动，保证了导线与地之间的绝缘距离，也叫硬跳线绝缘距离，也叫硬跳线绝缘子，杜绝了因跳线造成线路跳闸、导线电弧烧伤、断股、断线等现象。解决了导线随风舞动威胁架空输电线路安全、稳定运行的重要隐患。

可替换性和通用性

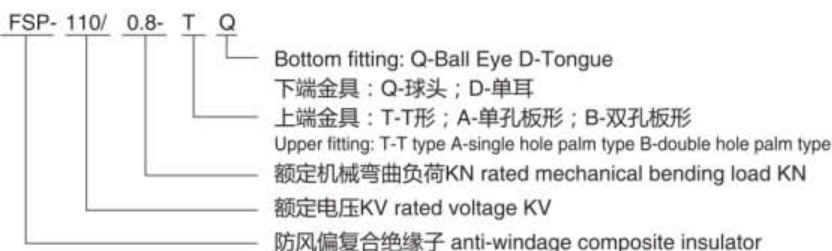
产品可替换以运行在线路中的硬跳线处悬式绝缘子，多种与铁塔的连接金具可供用户选择，也可为用户订制特殊规格的铁塔连接金具。安装快捷、方便。

The anti-wind composite insulator is applicable to 110 kV and 220 kV jumpers of transmission line, mainly including mandrel, sheath and skirt metal accessories and pressure device .

Product features:

- 1.no need to change the wire and Tower, convenient installation, simple to use, easy to be realized
- 2.Under strong wind ,the insulator offset is small, can effectively prevent 110 kV and 220 kV jump line monsoon discharge accident of the insulator .
- 3.In the condition of meeting the need of wind,it still has the advantage of insulators, such as Antipollution ,light weight, easy operation and maintenance .

产品型号说明 Mode Description



AQ系列

TQ系列

技术参数表 Main technical parameters

规格型号 Spe.&Type	额定电压 Rated voltage (kV)	额定机械弯曲负荷 Rated mechanical bending load kN	额定机械拉伸负荷 Rated mechanical tension load KN	连接标记结构 Structure of coupling marks	结构高度 H(mm) Structure height (mm)	最小电弧距离 Min arc distance H(mm)	最小公称爬电距离 Min nominal creepage distance (mm)	雷电全波冲击耐受电压(峰值)不小于 Full wave lightning impulse withstand voltage(peak value) not less than (kV)	工频1min湿耐受电压(有效值)不小于 1min power frequency wet withstand voltage not less than (kV)
FSP-35/0.4-TQ	35	0.4	100	16	730±15	500	1500	250	95
FSP-35/0.4-AQ	35	0.4	100	16	760±15	500	1500	230	95
FSP-66/0.8-TQ	66	0.8	100	16	930±15	700	2200	410	185
FSP-66/0.8-AQ	66	0.8	100	16	965±15	700	2200	410	185
FSP-110/0.8-TQ	110	0.8	100	16	1320±15	1050	3600	550	230
FSP-110/0.8-AQ	110	0.8	100	16	1355±15	1050	3600	550	230
FSP-220/0.8-TQ	220	0.8	100	16	2200±30	1950	6700	1000	395
FSP-220/0.8-BQ	220	0.8	100	16	2355±30	1950	6700	1000	395
FSP-220/0.8-AQ	220	0.8	100	16	2355±30	1950	6700	1000	395

防风偏均压环对应型号表

防风偏绝缘子型号 Anti-windage insulator type	上均压环（低压端用） Upper end ring for LV		下均压环（高压端用） Bottom end ring for HV		备注 note
	型号 type	备注 note	型号 type	备注 note	
FSP-110/0.8系列	无	无	FJH-110/100F	普通型	常规订货，普通型均压环
FSP-110/0.8系列	FJH-220/100F-FN	防鸟型	FJH-110/100F	普通型	常规订货，铁塔端防鸟害型均压环
FSP-220/0.8系列	FJH-220/100F	普通型	FJH-220/100F	普通型	常规订货，普通型均压环
FSP-220/0.8系列	FJH-220/100F-FN	防鸟型	FJH-220/100F	普通型	常规订货，铁塔端防鸟害型均压环

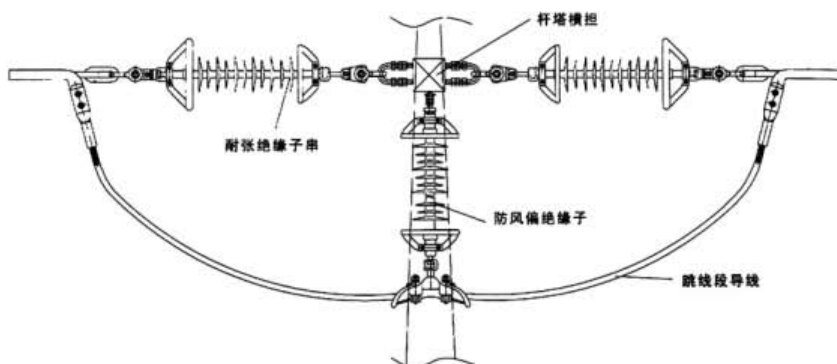
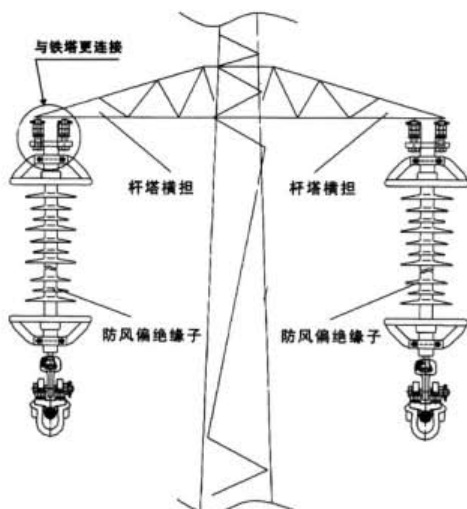
安装方法 Method of installation

- 1.防风偏复合绝缘子运输及安装中应轻拿轻放，不应投掷，并避免与各类杂件（导线、铁板、工具等）及坚硬物碰撞、摩擦；
- 2.起吊时，绳结要打在端部附件上，严禁打在伞裙或护套上，绳子必须碰及伞裙与护套部分时，应在接触部分用软布包裹；
- 3.不得将防风偏复合绝缘子当作放（收）线的辅助工具，以免使其受到冲击力或弯矩而损伤绝缘子；
- 4.严禁脚踩绝缘子伞裙；
- 5.安装均压环时，应注意调整，使环与绝缘子轴线垂直，对于开口型均压环，注意两端开口方向一致，以利于放电，保护伞裙；

Note:

- 1.The transportation and installation of the anti-windage composite insulator shall be taken good care without any throwing or collision, fiction with various sundries(wires,iron plates and tools etc.)and solid material.
2. When suspending the anti-windage composite insulator, the knot shall be made on the attachment at the end. Knots on shed or sheath are strictly prohibited. When the rope has to be contacted with the shed or sheath, the contacting area shall be packed with soft cloths.
3. never apply the anti-windage composite insulator as the assistant tool for the wire distribution and collection and collection in case that the insulator can be damages by impact or bending moment.
4. Do not step on the insulator shed with foot.
5. when installing the grading ring, attention shall be attached on the adjustments to make sure that the ring is vertical with the axial of the insulator. And for opening grading ring, the opening directions at both ends shall be consistent to facilitate the discharging and protect the shed.

安装示意图 Installation Drawing



复合耐张绝缘子 Composite Tension Insulator

概述 General

复合耐张绝缘子适用于污秽地区，尤其在重污秽地区使用，其抗张强度高，防污性能好，安装使用方便等，采用各种金具联结结构，与线路金具连接紧凑。

The composite tension insulator is suitable for the polluted area, especially for the severe pollution area, featured with high tensile strength, perfect antipollution performance, convenient operation and installation. It adopts various fitting coupling structure, very compact in connection with the line fitting.

产品型号说明 Mode Description

FNB 4 - □ / □ □ / □ □

颜色：默认为深红色；H-灰色；G-绿色；Y-黄色
Color: usually is red, H-gray; G-green; Y-yellow

连接金具结构；Link fitting structure

B-球头；S-球窝；T-单耳；E-O型环

Z代表两端连接呈90度转角，默认为平行

B-Ball Eye；S-Socket Clevis；T-Tongue；C-Clevis；E-Eye

Z means the connection of both ends at an angel of 90 degree, the parallel not marked

额定电压（KV）/额定负荷（KN）

Rated voltage(KV)/rated mechanical load(KN)

4代表设计序号 4：design Number

F代表复合；N代表耐张；B代表棒形绝缘子

F: composite; N: tension type; B: long-rod insulator

FNB₄-10/70-ST



FNB₄-10/70-SB-H



FNB₄-10/70-CT



FNB₄-10/70-TT-G



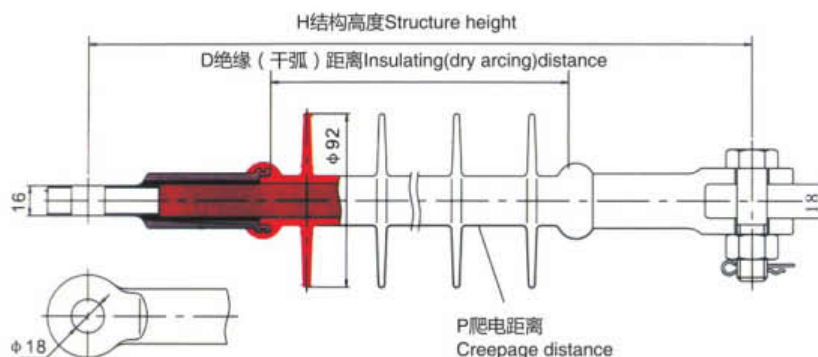
FNB₄-10/70-TT/Z



FNB₄-10/70-BB-H



结构示意图 Structure drawing



注：两端金具可根据需要搭配

Note: The end fitting may be fitted according requirement.

技术参数表 Main technical parameters

规格型号 Spec&Type	额定 电压(kV) Rated voltage	额定机械 拉伸负荷 (kN) Rated mechanical tensionload	结构 高度 H Structure height (mm)	最小电 弧距离h (mm) Min arc distance	最小公称 爬电距离(mm) Minnominal creepage distance	雷电全波冲击 耐受电压 Full wave lightning impulse withstand voltage (kV)	工频1min湿 耐受电压(kV) 1min power frequency wet withstand voltage
FNB4-1/70-XX	1~3	70	260±10	80	225	45	18
FNB4-6/70-XX	6	70	300±10	120	325	60	25
FNB4-10/40-XX	10	40	320±10	160	425	95	45
FNB4-10/70-XX	10	70	340±10	160	425	95	45
FNB4-10/100-XX	10	100	370±10	160	425	95	45
FNB4-15/70-XX	15	70	380±10	200	525	115	60
FNB4-20/70-XX	20	70	420±10	240	625	150	65
FNB4-20/100-XX	20	100	450±10	240	625	150	65
FNB4-24/70-XX	24	70	460±10	280	725	170	75
FNB4-24/100-XX	24	100	490±10	280	725	170	75
FNB4-28/70-XX	28	70	500±10	320	825	190	85
FNB4-33/70-XX	33	70	540±10	360	925	205	90
FNB4-35/70-XX	35	70	610±10	420	1050	230	95
FNB4-35/100-XX	35	100	640±10	420	1050	230	95

两端连接金具种类表 Table of end fitting type

附加字母表-XX Adding the letters	SB	ST	SC	BB	TC	TT	CC	CE	EE
代表金具 Representing the fitting	球窝-球头 Socket clevis -Ball eye	球窝-单耳 Socket clevis -Tongue	球窝-双耳 Socket clevis -Clevis	球头-球头 Ball eye -Ball eye	单耳-双耳 Tongue -Clevis	单耳-单耳 Tongue -Tongue	双耳-双耳 Clevis -Clevis	双耳-环型 Clevis -Eye	环型-环型 Eye- Eye
连接标记 Link mark	16-16	16-7	16-7	16-16	7-7	7-7	7-7	7-7	7-7

订货须知：

1.请根据两端要求的金具在型号中注明附加字母；2、可根据用户的要求制定和搭配两端金具；3、硅橡胶颜色默认为红色，也可以选择灰、绿、黄、兰、黑等颜色。

Notice for order:

1. The model of fitting should be added with additional letters according to the requirements of the ends;

2. The end fittings should be designed and fitted according to customer's requirement;3.The silicon rubber is usually red color, gray, green, yellow, blue, black can be selectable.

复合耐张绝缘串 Composite Tension String

复合耐张绝缘串由复合绝缘子、节能型绝缘耐张金具组成，具有结构紧凑，安装方便、绝缘可靠、耐污性强、节能显著等优点，深受广大用户喜爱。

Composite tension string was constituted by composite insulator and insulating tension clamp, it have many advantage like compact structure, easy installation, reliability insulation, better Stain resistance , energy saving, etc.,

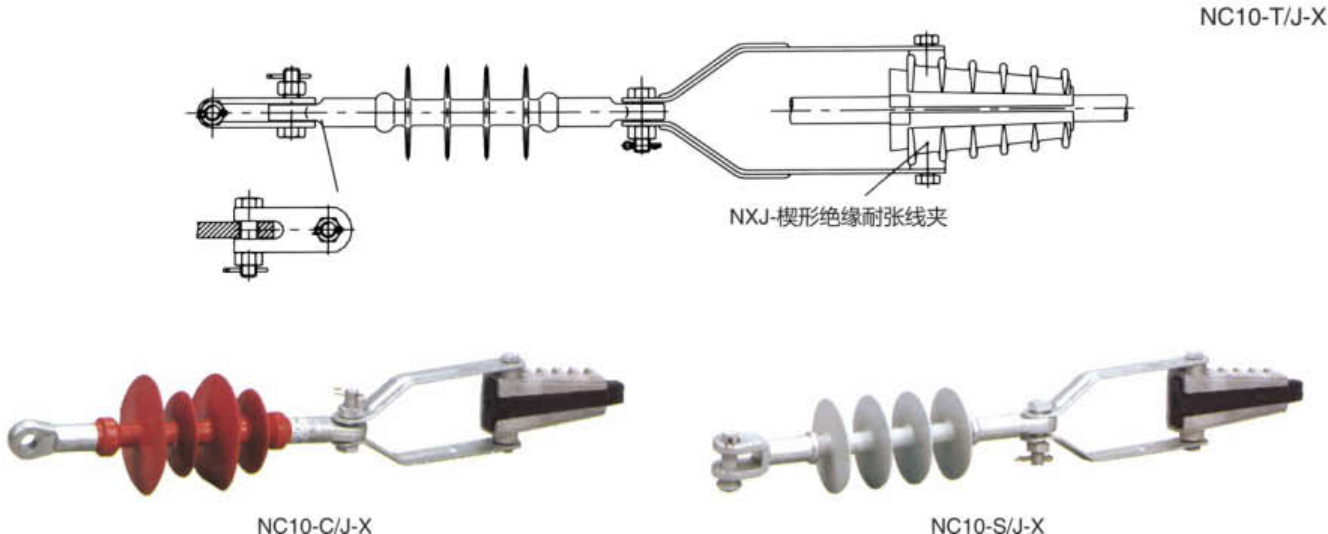
产品型号说明 Mode Description

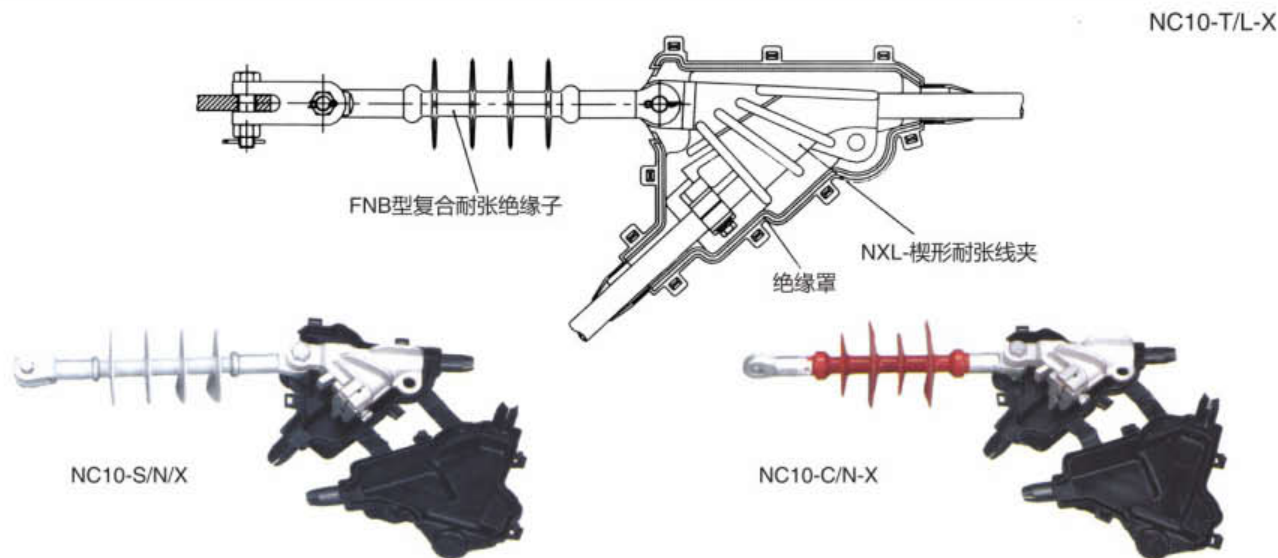
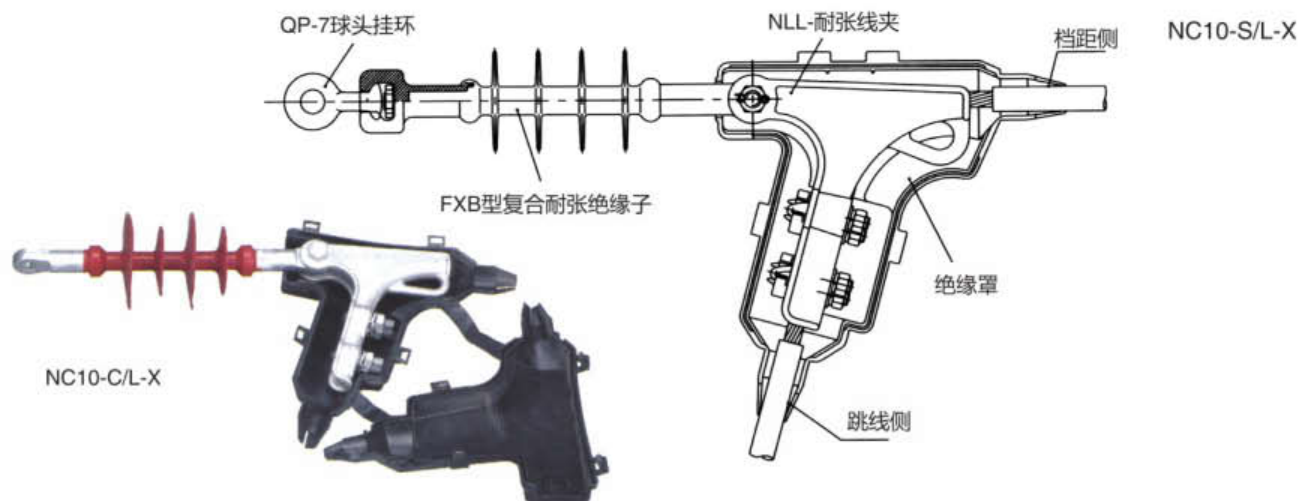


技术参数表 Main technical parameters

规格型号 Spec&Type	绝缘子型号 Insulator type	耐张线夹型号 Tension clamp type	耐张串规格Composite insulator tension string Spec. X适用的电缆规格 suitable conductor mm2				
			-1	-2	-3	-4	-5
NC10-S/J-X	FNB-10/70-ST	NXJ	16-35	50	70-95	120-150	185-240
NC1-S/J-X	FNB-1/70-CT	NXJ	25-50	70-95	120	150	185-240
NC10-S/L-X	FNB-10/70-ST	NLL	(16-70)	(50-95)	(70-15)	(120-185)	(120-300)
NC1-S/L-X	FNB-1/70-CT	NLL	(16-70)	(50-95)	(70-15)	(120-185)	(120-300)
NC10-S/N-X	FNB-10/70-SC	NXL	(35-70)	35 (95-150)	50-95 (185-240)	120 (300)	150-300
NC1-S/N-X	FNB-1/70-CC	NXL	16-35 (35-70)	50-95 (95-150)	120-150 (185-240)	185 (300)	240-300

安装示意图 Installation drawing





订货须知 Order notice

- 1、默认的悬式绝缘子两端金具为球头球窝结构，如有不同请注明类型；
 - 2、均压环可改善电压分布，同时在闪络时通过环对地放电，可起到保护伞套不被电弧灼的作用，而缓解带电端伞套的老化，一般情况下，110KV及以下电压等级产品不带均压环；220KV的产品高压端带一个均压环，但在多雷区建议两端配均压环；330KV及以上电压等级产品高压端和接地端各带一个均压环。请在订货时注明均压环的配法。
 - 3、根据实际环境需要，为防止积雪、冰凌、鸟害等对复合绝缘子的影响，容易造成绝缘子闪络，而开发出特大伞型结构的绝缘子，在实际运行中，取得了明显的效果。
- 1、The default structure of hardware at both ends of the suspension insulator is ball-end and-socket, please notify the type on different demands;
 - 2、The grading ring can improve the voltage distribution and meanwhile discharge to earth when the flashover is passing through to protect the shed from being burnt by the electric arc and thus release the aging of shed at the live end. Generally, products with the voltage grade of 66KV or under are not provided with grading rings; and for 110KV, 1 grading ring is provided while it is recommended to equip two rings at the both ends in areas where lightning is quite often; At the high voltage end and earthing end of products with voltage grade of 220KV or over, 1 grading ring is provided at both ends. Please indicate the arrangement of the grading ring when putting the order.
 - 3、The company has taken the actual environmental needs in to account and developed ultra large shed insulator flashover to prevent the composite insulator from being affected by snow, ice edges and bird damage etc. and avoid the insulation caused, Evident effects have been made in the actual operation.

复合针式绝缘子 Composite Pin Insulators

用途 Application

本产品适用于高压线路设施。具有良好的憎水性、抗老化性、耐漏电起痕性和耐电蚀损性，具有很高的抗张、抗弯强度，其机械强度高，抗冲击性能、防震和防脆断性能好，重量轻，安装方便，其顶部和底部安装尺寸与相应的陶瓷针式安装尺寸相同，可以互换使用。

These product is used in high voltage lines, with good hydrophobic, withstand leakage tracking, and electric corrosion resistant,high anti-bending,and tensile, impact withstand, shockproof, fragile resistant, light weight, easy installation, the mounting sizes of top and bottom match with related porcelain pin insulator, interchangeable.

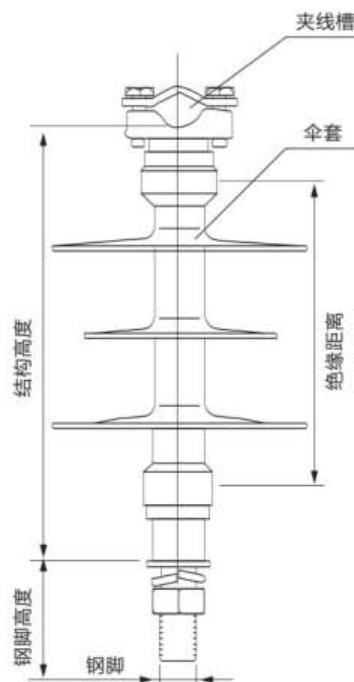
产品型号说明 Mode Description

FPQ -□/□ T □

钢脚直径 (mm) spindle diameter
T-铁横担; L-玻璃钢横担; M-木横担
T-steel cross-arm; L-Fiberglass cross-arm;
M-wooden cross-arm

额定电压 (KV) /额定弯曲负荷 (KN)
Rated voltage(KV)/Rated bending load(KN)

F代表复合; P代表针式; Q代表防污型
FPQ: Composite Pin Insulator



技术参数表 Main technical parameters

规格型号 Spec&Type	额定 电压(kV) Rated voltage	额定机械 拉伸负荷 (kN) Rated mechanical tensionload	结构 高度 H Structure height (mm)	最小电 弧距离h (mm) Min arc distance	最小公称 爬电距离(mm) Minnominal creepage distance	雷电全波冲击 耐受电压 Full wave lightning impulse withstand voltage (kV)	工频1min湿 耐受电压(kV) 1min power frequency wet withstand voltage
FPQ-1/3T	1~3	3	155	85	180	45	18
FPQ-10/3T	10~15	3	245	170	460	105	50
FPQ-10/4T	10~15	4	245	170	460	105	50
FPQ-10/6T	10~15	6	245	170	460	105	50
FPQ-20/4T	20	4	300	215	600	150	62
FPQ-20/12.5T	20	12.5	370	275	775	170	70
FPQ-35/4T	35	4	400	320	835	210	90
FPQ-35/6T	35	6	450	370	1015	230	95

订货须知 1、所配螺帽的大小。2、是否需要压 Plate 线板。
Order Notice: 1.Size of supporting screw cap. 2. Whether tension disc is required.

线路柱式绝缘子 Composite Line Post Insulator



技术参数表 Main technical parameters

规格型号 Spec&Type	额定 电压(kV) Rated voltage	额定机械 拉伸负荷 (kN) Rated mechanical tensionload	结构 高度 H Structure height (mm)	最小电 弧距离h (mm) Min arc distance	最小公称 爬电距离(mm) Minnominal creepage distance	雷电全波冲击 耐受电压 Full wave lightning impulse withstand voltage (kV)	工频1min湿 耐受电压(kV) 1min power frequency wet withstand voltage
FPS-105/5	10~15	5	230	180	380	105	45
FPS-105/8	10~15	8	230	180	420	105	45
FPS-150/5	20	5	300	215	600	150	65
FPS-150/12.5	20	12.5	325	196	610	150	65
FPS-170/12.5	20	12.5	350	240	650	170	70
FPS-200/3	35	3	445	335	1050	200	85
FPS-200/5	35	5	465	345	980	200	85

复合支柱绝缘子 Composite Station Post Insulator

用途 Application

本产品适用于电站设施。具有良好的憎水性、抗老化性、耐漏电起痕性和耐电蚀损性，具有很高的抗扭强度和抗弯强度，其机械强度高，抗冲击性能、防震和防脆断性能好，防污能力高，抗冲击性能优越，体积小，重量轻、安装方便，其顶部和地步安装尺寸与相应的瓷支柱安装尺寸相同，可以互换使用，且免维护、不需人工清扫，可与瓷等绝缘子互换使用。

The product is applicable for power plant installation with good performances in hydrophobicity, aging resistance, creep age tracking resistance, electrical erosion resistance and high tensional strength and bending strength. The product is high in mechanical strength, outstanding in shock resistance, quakeproof resistance and brittle fracture resistance. Also the product is light in weight and easy for installation. The installation dimensions are of the same with those of corresponding porcelain pin insulator and communicable with porcelain. The product is free from maintenance and manual cleaning.



技术参数表 Main technical parameters

规格型号 Spec&Type	额定 电压(kV) Rated voltage	额定机械 拉伸负荷 (kN) Rated mechanical tensionload	额定扭转 负荷 Rated reverse load (kNm)	结构 高度 H Structure height (mm)	最小公称 爬电距离(mm) Minnominal creepage distance	雷电全波冲击 耐受电压 Full wave lightning impulse withstand voltage (kV)	工频1min湿 耐受电压(kV) 1min power frequency wet withstand voltage
FZSW-10/4	10	4	0.6	215	300	75	42
FZSW-24/8	24	8	1.2	340	750	150	65
FZSW-35/5	35	5	1.8	400	750	185	80
FZSW-35/6	35	6	2	450	1050	230	95
FZSW-66/6	66	6	1.5	760	1900	410	185
FZSW-66/8	66	8	2	760	2010	410	185
FZSW-110/10	110	10	4	1200	2900	500	230
FZSW-220/10	220	10	4	2400	7060	1000	395

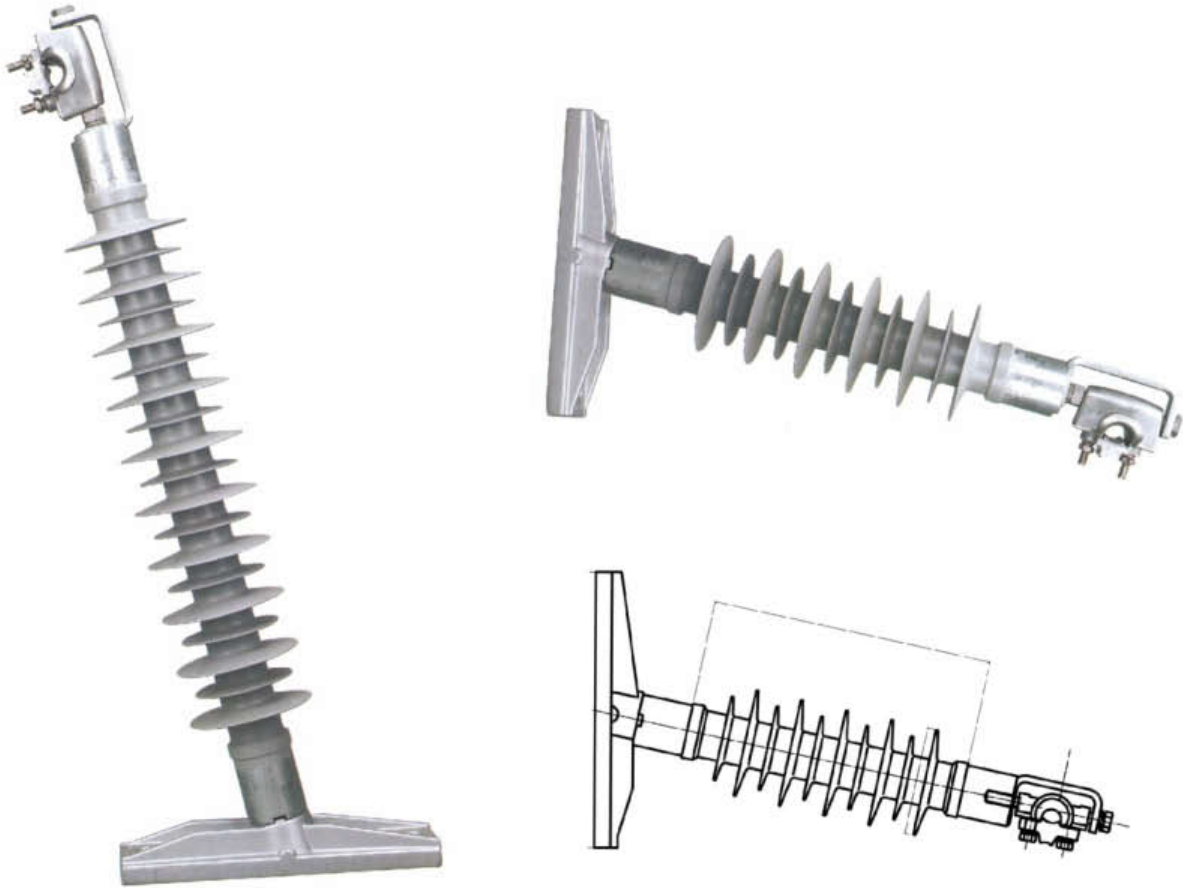
订货须知 Order Notice

在订货时须指明产品的规格、型号、数量。需指明安装孔的大小及尺寸。

Specifications, models and amounts of the products shall be indicated when putting the order.

The size and dimension of the installation hole shall be indicated.

复合水平支柱绝缘子 Composite Horizontal Line Post Insulator



技术参数表 Main technical parameters

规格型号 Spec&Type	额定 电压(kV) Rated voltage	额定悬臂 负荷kN Specified Cantilever Load	伞数 N°of Sheds A n'(1)	结构高度 Length L±15 mm	爬电距离 (mm) Leakage distance mm	干电弧 距离 Dry arc dista nce mm	工频耐受电压 Power frequency withstand 50Hz		雷电冲击耐受电压 Lightning impul. Withstand 1,2/50	
							Dry干 kV	Wet湿 kV	Posit. KV	Negat. KV
FC-12	12-17	8.4	3+2	527	513	226	110	100	150	190
FC-17	17-24	7.2	4+3	580	718	288	120	110	180	215
FC-24	24-36	6.3	5+4	645	924	350	150	140	235	270
FC-35	35-52	5.0	6+5	704	1130	412	180	165	285	325
FC-66	66-115	3.0	10+9	970	1950	660	355	285	570	615
FC-110	110-150	2.4	18+17	1300	3510	1105	435	355	680	735

注：额定悬臂负荷可根据客户需求更改，两端金具可由铝合金或者热镀锌钢生产
Note : The SCL can be increased according your requirement, And the metal fittings can be in aluminum or galvanized steel.

复合水平支柱绝缘子顶端金具 Clamp-top Clamp Of Composite Horizontal Line Post Insulator

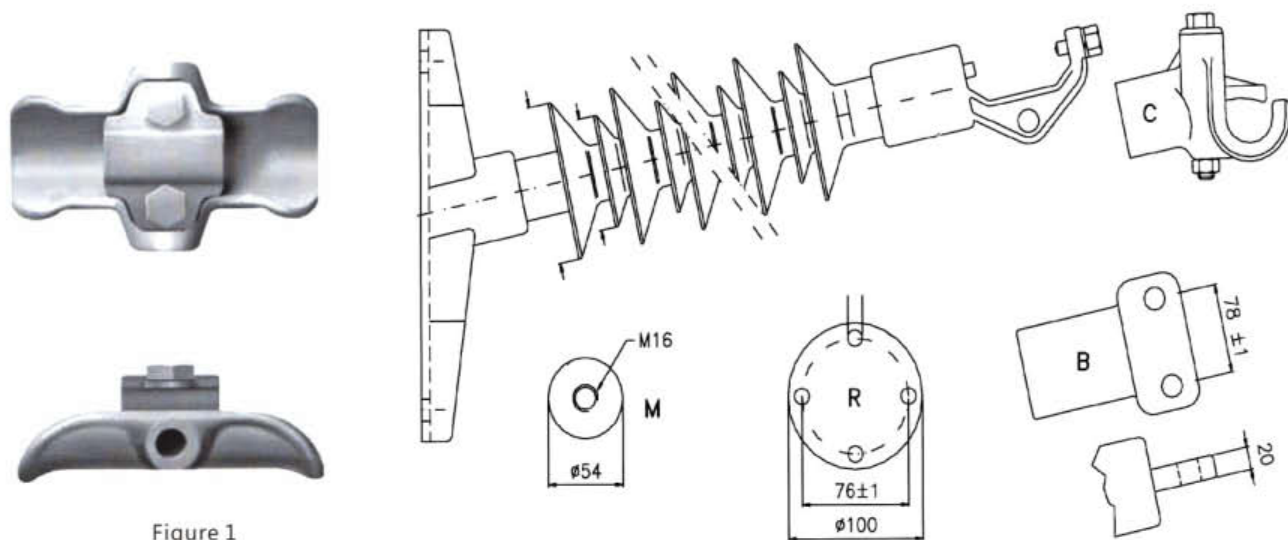


Figure 1

复合水平支柱绝缘子分为水平和垂直两种，所以我们的顶端金具分为VC和HC两种。

顶端金具由铝合金制成，适用于10mm-36mm的导线。当我们选择复合水平支柱绝缘子时，必须选择适合自己需要的型号，确认产品的尺寸。对于金具的选择，可查看下面表格。

Our clamp-top clamp can be mounted on the horizontal& vertical line post insulators that have the VC or the HC top end fitting. The clamp-top clamp is in aluminum and can be used with conductors from 10mm up to 36mm diameter size. Once chosen the insulator that is the most suitable to the characteristics of the line on which you have to install it, in order to obtain the total length of the insulator (L), please select the kind of fitting end you have to use and refer to the following table:

金具选型表 Technical parameter of fittings

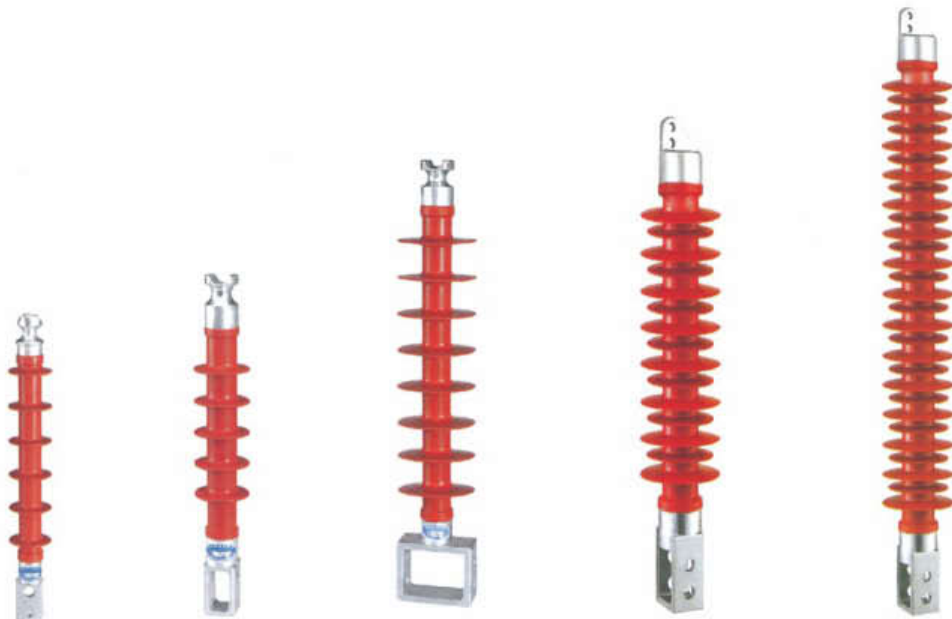
接地金具型号 Ground fitting	接线金具型号 Line fitting	规格型号 SPEC.&TYPE	长度改变 Length change(L)
Fitting GB	Fitting HC	HCGB	0
Fitting M	Fitting HC	HCM	+36
Fitting R	Fitting HC	HCR	-78
Fitting GB	Fitting B	BGB	+9
Fitting M	Fitting B	BM	+44
Fitting R	Fitting B	BR	-69
Fitting GB	Fitting C	CGB	-40
Fitting M	Fitting C	CM	-150
Fitting R	Fitting C	CR	-105

复合横担绝缘子 Composite Cross-arm Insulator

概述 General

复合横担绝缘子能有效地利用狭窄的走廊面积、并压送电，适用于城网技术改造，能降低杆塔高度，可节约大量的人力、物力和财力，由于其弯曲强度高，可防止瓷横担容易出现的断裂事故，是瓷横担所无法替代的产品；体积小，重量轻，防震、抗冲击能力强、不需人工清扫，为安全运行提供保障。

These product are applicable to urban power network reconstruction where streets are narrow. It can take advange of urban narrow power distribution corridor, lower the necessary height of pole or tower. With high bending strength, they can avoid rupture accident taken place for porcelain insulators. Moreover, they are of good pollution resistance. The product is light in volume and weight and strong in quake proof and anti-impact abilities and free from manual cleaning; and can provide guarantee for the safe operation.



技术参数表 Main technical parameters

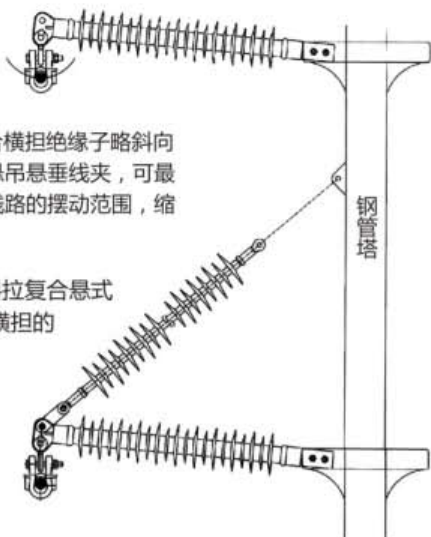
规格型号 Spec&Type	额定 电压(kV) Rated voltage	额定弯曲 负荷KN Rated bending load	结构 高度 H Structure height (mm)	最小电 弧距离h (mm) Min arc distance	最小公称 爬电距离(mm) Minnominal creepage distance	雷电全波冲击 耐受电压 Full wave lightning impulse withstand voltage (kV)	工频1min湿 耐受电压(kV) 1min power frequency wet withstand voltage
FS-10/5	10	5	320	196	340	150	60
FS-12/4	12	4	425	285	470	150	60
FS-20/5	20	5	475	328	860	170	70
FS-35/5	35	5	620	490	1060	265	100
FSW-35/5	35	5	595	455	1280	230	95
FS-35/10	35	10	605	440	1380	230	95
FS-66/5	66	5	830	664	2110	410	185
FS-66/8	66	8	845	664	2110	410	185
FSW-66/8	66	8	815	664	2110	410	185
FS-110/10	110	10	1270	1050	3150	550	230
FSW-110/10	110	10	1270	1050	3150	550	230

订货须知：1、如用户需要不同的端头金具、安装尺寸请另注明。

Order Notice:1. If custom need different top end fitting, please inform us firstly.

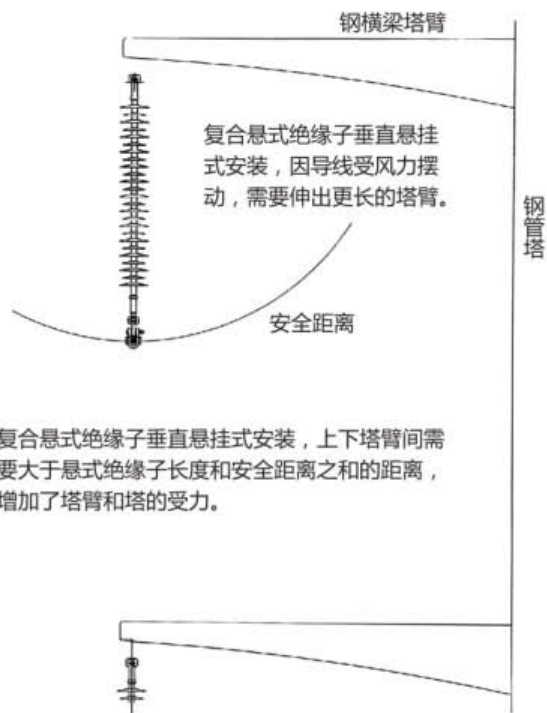
特点比较

对用于城市道路沿线的钢管塔，复合横担绝缘子能有效地降低塔臂间距盒伸出距离，降低塔高，增加安全性和抗风暴能力。

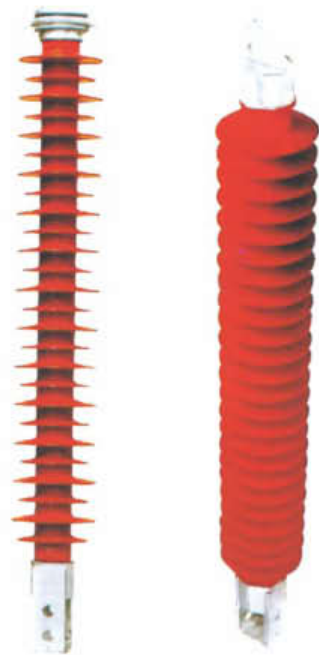


安装方式A:复合横担绝缘子略斜向上安装，直接悬吊垂直线夹，可最大程度地减少线路的摆动范围，缩小输电空间。

安装方式B:斜拉复合悬式绝缘子可增加横担的抗弯能力。



复合悬式绝缘子垂直悬挂式安装，上下塔臂间需要大于悬式绝缘子长度和安全距离之和的距离，增加了塔臂和塔的受力。



高压线路用单臂横担绝缘子参数(线夹型) Single Cross-arm Insulator For Hv



技术参数表 Main technical parameters

规格型号 Spec&Type	额定 电压(kV) Rated voltage	额定弯曲 负荷KN Rated bending load	联长 "X"	绝缘 距离	最小公称 爬电距离(mm) Minnominal creepage distance	雷电全波冲击 耐受电压 Full wave lightning impulse withstand voltage (kV)	工频1min湿 耐受电压(kV) 1min power frequency wet withstand voltage	重量 (kg)
FSJ3-66/10A	66	10	980	711	1727	410	185	22.7
FSJ4-66/8A	66	8	1115	838	2083	410	185	24.5
FSJ2-110/8A	110	8	1250	991	2438	550	230	25.9
FSJ3-110/6A	110	6	1384	1118	2794	550	230	27.7
FSJ4-110/6A	220	6	1514	1245	3150	550	230	29.5
FSJ1-220/4A	220	4	2180	1930	4928	1000	395	37.2
FSJ2-220/4A	220	4	2314	2057	5283	1000	395	39.0
FSJ3-220/3A	220	3	2446	2210	5639	1000	395	40.4
FSJ4-220/3A	220	3	2710	2462	6350	1000	295	44.0

高压线路用单臂横担绝缘子参数(双孔金具型) DOUBLE HOLE FITTING TYPE CROSS-ARM INSULATOR FOR HV



技术参数表 Main technical parameters

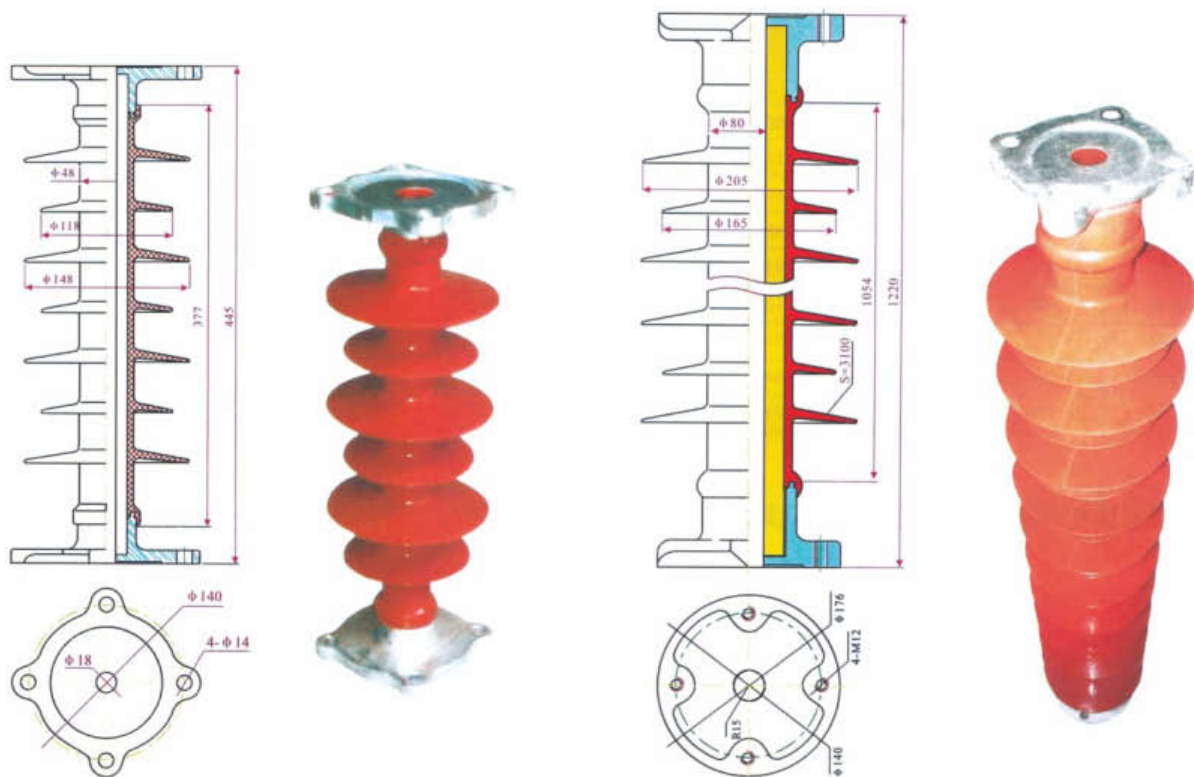
规格型号 Spec&Type	额定 电压(kV) Rated voltage	额定弯曲 负荷KN Rated bending load	联长 "X"	绝缘 距离	最小公称 爬电距离(mm) Minnominal creepage distance	雷电全波冲击 耐受电压 Full wave lightning impulse withstand voltage (kV)	工频1min湿 耐受电压(kV) 1min power frequency wet withstand voltage	重量 (kg)
FSJ3-66/16B	66	16	986	737	1956	410	185	40.8
FSJ4-66/16B	66	16	1113	864	2362	410	185	43.1
FSJ2-110/12.5B	110	12.5	1245	991	2743	550	230	40.9
FSJ3-110/12.5B	110	12.5	1392	1143	3150	550	230	48.1
FSJ4-110/12.5B	220	12.5	1506	1270	3556	550	230	49.9
FSJ1-220/6B	220	6	2159	1930	5537	1000	395	61.2
FSJ2-220/6B	220	6	2291	2083	5944	1000	395	63.9
FSJ3-220/6B	220	6	2418	2210	6350	1000	395	66.2
FSJ4-220/6B	220	6	2680	2489	7137	1000	295	70.8

复合光纤绝缘子 Optical-fiber Composite Insulator

概述 General

复合光纤绝缘子为光电式互感器的组件，具有强度高，重量轻，防震、抗冲击能力强、耐污性好，不需要人工清扫，是瓷套的理想替代品，也可用于光纤复合地线的光纤引过高压区。

Optical-fiber composite insulator is the component of optical transformer, with high strength, light weight, strong impact and shock resistance, strong antipollution behavior, manual cleaning free, it is the ideal substitute for porcelain bushing shell, in addition, it is also used for the optical fiber lead high-pressure area of optical-fiber composite grounding wire.



技术参数表 Main technical parameters

规格型号 Spec&Type	额定 电压(kV) Rated voltage	额定弯曲 负荷KN Rated bending load	结构 高度 H Structure height (mm)	最小电 弧距离h (mm) Min arc distance	最小公称 爬电距离(mm) Minnominal creepage distance	雷电全波冲击 耐受电压 Full wave lightning impulse withstand voltage (kV)	工频1min湿 耐受电压(kV) 1min power frequency wet withstand voltage
FZGQ-35/5	35	5	445	353	930	185	80
FZGQ-110/8	110	8	1270	1050	2900	550	230
FXGQ-220/6	220	6	2700	2000	6600	1000	395

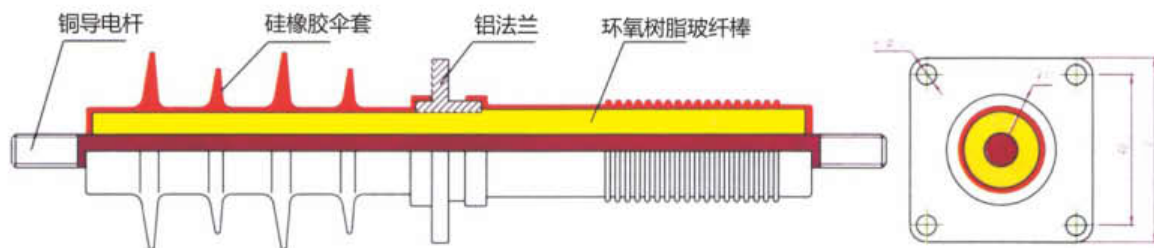
复合干式穿墙套管 Composite Dry Wall Bushing

概述 General

本产品是一种新型的穿墙套管，它的内绝缘采用新型绝缘材料，外绝缘（硅橡胶伞裙）使用高性能高温硫化硅橡胶，具有良好的耐污性能和防爆性能，符合电力部门无油化，小型化的发展趋势，是满足城乡电网改造的新一代高压输变电产品

This products is a new model of all-through bushing, applying new type insulating material for the internal insulation, using high performance, high temperature silicon sulfide hydrocarbon for the external insulation, with fine anti-pollution and explosion proof performance, it accords with the development trend of non-oil and miniaturization of the power department. It is a new generation of HV product satisfying requirements of urban& rural power network reformation.

结构说明 Structure description



技术参数表 Main technical parameters

规格型号 Spec&Type	额定 电压(kV) Rated voltage	额定 电流 (A) Rated current	允许弯曲 负荷 (N) Permitted bending load	弯曲破坏 负荷 (N) Rated bending load	雷电冲击耐受 电压峰值 (kV) Lighting impulse withstand voltage	工频1min温耐受 电压有效值 (kV) Power frequency wet withstand voltage
FCGW-10/200~630	10	200~630	625	1250	75	30
FCGW-12/630~3150	12	250~1600	625	1250	75	30
FCGW-20/630~3150	20	630~3150	625	1250	150	60
FCGW-40.5/630~3150	40.5	630~3150	625	1250	200	80
FCGW-72.5/630~1600	72.5	630~1600	625	1250	325	147
FCGW-126/630~1600	126	630~1600	625	1250	550	230



FCGW-12/250-1600



FCGW-24/630-3150



FCGW-40.5/630-1600



FCGW-126/630-1600

隔离开关、熔断器、高压计量箱用复合绝缘子

Composite Insulators For Isolator, high Voltage Metering Unit



HJDW1-500V系列隔离开关
Series isolating switch



HGW9系列隔离开关
Series isolating switch



HGW9系列隔离开关
Series isolating switch



高压计量箱用导电管(复合套管)
Conductive pipe



遥控跌落开关拉杆
Pull rod for remote
control drop out switch



遥控跌落开关拉杆
Pull rod for remote
control drop out switch



HGW4支柱
HGW4 pays the pillar



跌落式熔断器绝缘子
Insulators for fused
cutout



跌落式熔断器绝缘子
Insulators for fused
cutout



跌落式熔断器绝缘子
Insulators for fused
cutout



复合跌落式
熔断器绝缘子
Insulators for fused
cut-out dropout



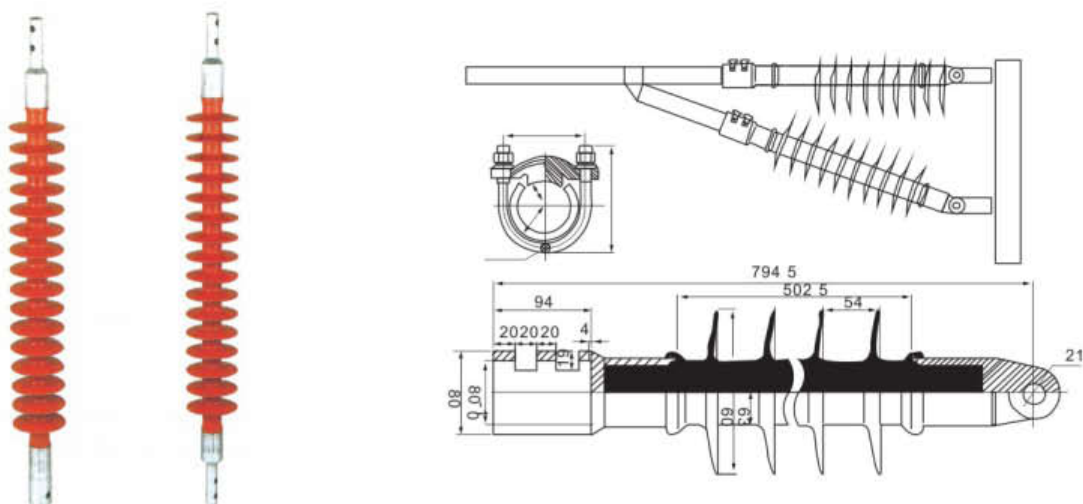
ZW7-40.5/1250
复合拉杆绝缘子
Compound pulling
insulator

电气化铁道用复合绝缘子 Composite Insulator For Electric Railway

概述 General

本产品适用于运行条件复杂的电气化铁道隧道，能有效的防止污闪事故，减少清扫维护工作量。其在工作时不仅受到张力，有时也受到弯曲力，前者属于耐张型，后者属线路支柱式绝缘子。由于其尺寸较小，在隧道空间较小时，特别是在重污秽地区是瓷、玻璃绝缘子无法替代的产品。

The product is applicable for electrical railway tunnels with complex operation condition and can effectively prevent pollution flashover accidents, reduce the workload of cleaning and maintenance. In operation, some times are under tension force (tension type) and some times under bending force (line post type), as the product is small in dimensions, it is irreplaceable by porcelain or glass insulators when the tunnel is small.



技术参数表 Main technical parameters

序号 NO.	代号 Old type	型号 Type	连接形式 Connecting mode	系统标称电压 System nominal voltage (kV)	额定机械拉伸负荷 Rated mechanical tensile load (kN)	击耐受电压(峰值)不小于 Full wave lightning impulse with stand voltage (peak value) not less than (kV)	工频湿耐受电压(有效值)不小于 1min power frequency wet withstand voltage not less than (kV)	0.4mg/cm ² 盐密下人工污秽耐受电压 Artificial foul withstand voltage under 0.4mg/cm ² salinity	最小公称爬电距离 Min Nominal creepage distance (mm)	结构高度 Structure height (mm)	重量 Weight (kg)	伞裙形状 Shed type
1	1952	FQX1-25	aa	25	60	270	270	40	1400	650	2.1	b
2	1953	FQX2-25	bb	25	20	270	270	40	1400	840	2.8	a
3	1954	FQX3-25	bb	25	20	270	270	40	1400	930	3.2	a
4	1954	FQE1-25*	ac	25	20	270	270	40	1400	760	3.0	a
5	1955	FQE2-25*	gh	25	20	270	270	40	1400	806	3.3	a
6	1956	FQX4-25	af	25	60	270	270	40	1400	645	2.0	b
7	1957	FQX5-25	ff	25	60	270	270	40	1400	640	2.0	b
8	1958	FQE3-25*	gc	25	20	270	270	40	1400	836	3.1	a
9	1959	FQE4-25*	de	25	20	270	270	40	1400	695	2.5	c
10	1960	FQE5-25	gi	25	20	270	270	40	1400	695	**	c

该产品须进行通称弯曲拉伸负荷实验，该实验在4kN拉伸负荷下，弯曲为100mm时，其变形挠度小于12mm。

This specification shall carry out test of bending tensile load under tensile force of 4kN. On condition of bending distance 100mm, the deformation immunity shall be less than 12mm.

根据用户要求制作，重量随之变动。

According to different Requirement, the weight will be not same.

硅橡胶增爬裙 Silicon-rubber Antipollution Shed

概述 General

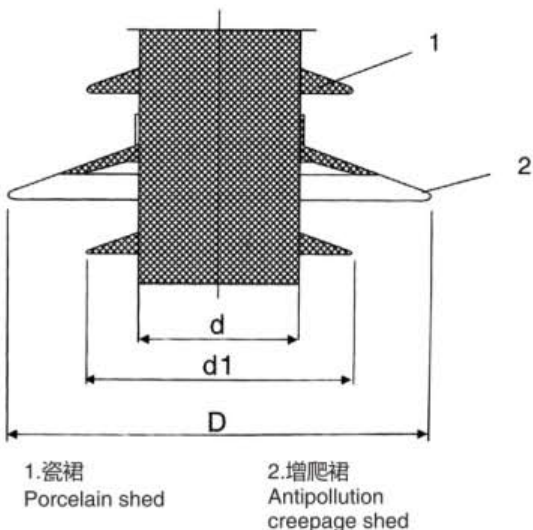
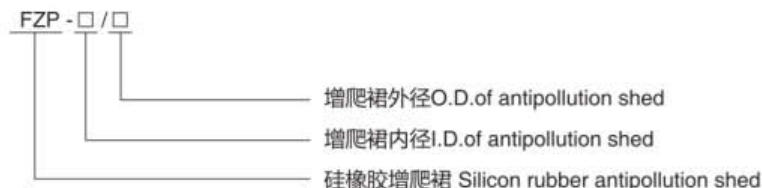
硅橡胶防污增爬裙主要用于10-500kV变电站的支柱、开关、断路器、电压（电流）互感器等瓷套，增加其爬距，解决原有瓷绝缘子爬电距离不够，耐污闪能力差的特点以提高其耐污能力。

The silicon-rubber antipollution shed is mainly used for the porcelain bushing shell of 10-500KV transformer substation post, switch, circuit breaker, voltage(current)transformer to increase the creepage distance, and improve the antipollution ability, it can solve the problem of insufficient creepage distance and poor pollution flashover resistance of traditional porcelain insulator.

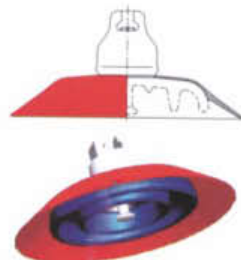
性能特点 Performance & features

1. 具有优良的憎水性、迁移性和电绝缘性，耐污闪性能好；
2. 优异的耐大气老化、耐臭氧老化、耐高温及潮湿性能；
3. 抗漏电起痕，抗电蚀性能良好；
4. 适用性广，安装简单，成本低廉
5. 电气性能：一分钟工频干耐受电压 $\geq 45\text{kV}/\text{片}$
6. 使用增爬裙，爬电比距增加20%，污闪电压、提高50%以上；
1. Outstanding hydrophobic behavior, mobility and electric insulation, perfect pollution flashover resistance.
2. Perfect atmospheric aging resistance and ozone aging resistance, high/low temperature resistance and dam proof property.
3. Strong tracking resistance and electric corrosion resistance.
4. Strong applicability, simple installation and low cost.
5. Good electric performance, 1 min power frequency dry type withstand voltage can be more than or equal to 45KV per piece.
6. It uses the antipollution shed, the creepage distance is increased 20%, and the pollution flashover voltage is increased over 50%.

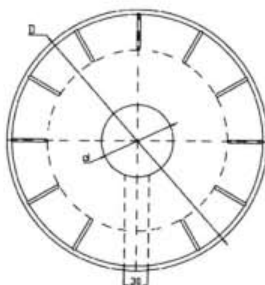
产品型号说明 Mode Description



支柱瓷绝缘子增爬裙



悬式瓷绝缘子增爬裙



技术参数表 Main technical parameters

规格型号 Spec&Type	内径 (mm) I.D.	外径 (mm) O.D	伞伸出 (mm) Shed extension	爬电距离 (mm) Creepage distance	状 态 state
FZP-50/250	50	250	100	200	最大 MAX
FZP-60/270	60	270	105	210	
FZP-80/310	80	310	115	230	
FZP-100/390	100	390	145	290	
FZP-105/390	105	310	145	290	
FZP-110/310	110	310	100	200	
FZP-125/310	125	315	95	190	
FZP-138/335	135	335	100	200	
FZP-138/325	138	325	94	187	
FZP-140/360	140	360	110	220	
FZP-140/420	140	420	140	280	
FZP-160/390	160	390	115	230	
FZP-165/390	165	390	113	225	
FZP-170/390	170	390	110	220	
FZP-185/390	185	390	103	205	
FZP-210/410	210	410	100	200	

规格型号 Spec&Type	内径 (mm) I.D.	外径 (mm) O.D	伞伸出 (mm) Shed extension	爬电距离 (mm) Creepage distance	状 态 state
FZP-225/450	225	450	113	225	最大 MAX
FZP-230/450	230	450	110	220	
FZP-265/485	265	485	110	220	
FZP-280/500	280	500	110	220	
FZP-300/540	300	540	120	240	
FZP-315/570	315	570	128	255	
FZP-342/580	342	580	119	238	
FZP-345/580	345	580	118	235	
FZP-370/600	370	600	115	230	
FZP-385/600	385	600	108	215	
FZP-420/640	420	640	110	220	
FZP-435/670	435	670	118	235	
FZP-435/680	435	680	123	245	
FZP-480/740	480	740	130	260	
FZP-495/736	495	736	121	241	

安装方法 Installation method

根据变电站现场的污秽等级决定加装的数量、位置，以获得最佳的效果。将硅橡胶增爬裙绕在瓷绝缘子支柱子上，用专用玻璃胶或单组硅胶将开口对合部分粘牢，可间隔2~3个瓷伞裙放置一个增爬裙。硅橡胶增爬裙的安装示于上图，从下面可知，超出瓷裙以外部分的爬距。绝缘子总爬距应等于或大于由该地区污秽等级所要求的爬距。

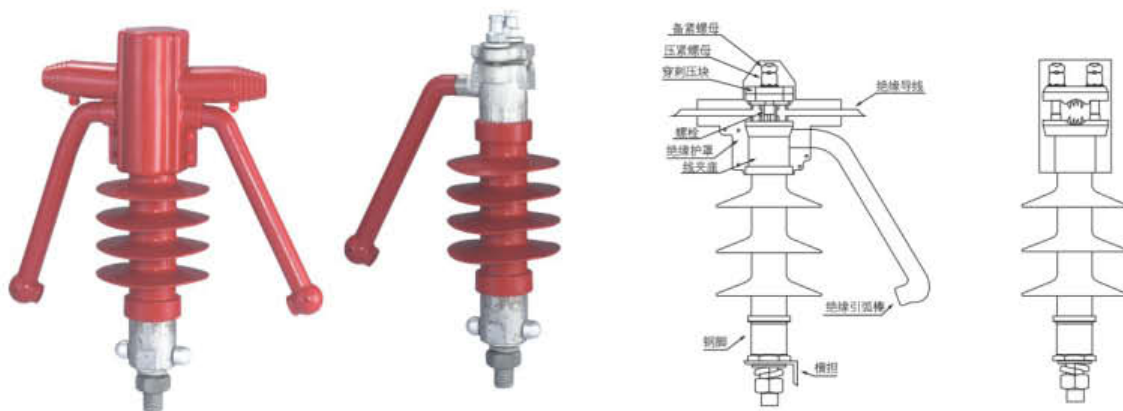
The mounting quantity and position is determined according to the pollution class of transformer station, try to get the best efficiency. The silicon rubber antipollution shed is wrapped at the post of porcelain insulator; the opening involution part should be bound firmly with the glass cement or one-part silicon gel. One antipollution shed may be placed every 2-3 porcelain sheds. The installation of silicon rubber antipollution shed is shown as right drawing. As the right drawing shows, the creepage distance beyond the porcelain shed is the newly increased creepage distance. The total creepage distance of insulator should be equal to or more than tat required by the pollution class of the area.

FEG 型防雷支柱绝缘子 穿刺式/非穿刺式

FEG Type Lightning-protection Piercing Post Insulator

用途 Application

随着配电线路发展和线路绝缘化，传统设计的绝缘线路难以承受直接雷或感应雷的作用，雷击断线、瓷绝缘子炸毁等已经成为电力系统面临的又一个新的难题。FEG型防雷支柱绝缘子是新型组合式结构的二合一产品，采取“先堵塞后疏通”设计原理，不仅适用于架空线路的绝缘支撑，而且还具有防止雷击断线、瓷绝缘子炸毁及减少雷击跳闸的保护功能。其原理为：当雷电过电压超过绝缘堵塞一定数值时，在防雷支柱绝缘子的引弧棒和下钢脚之间形成短路通道，引起闪络放电，接续的工频电弧便在放电间隙处燃烧，以保护导线免于烧伤。本产品应用于绝缘线时还具有穿刺通电功能，不剥开绝缘层可避免线芯进水 and 腐蚀，安装施工极为方便可靠。由于把支柱绝缘子和防弧金具合二为一（等电位），不受环网供电负荷侧（背离电源侧）影响，使线路更加简洁美观并极大地降低了造价。本产品性能可靠，投资少，收效大，为电力部门防止架空绝缘导线雷击断线提供了一条经济有效的途径。



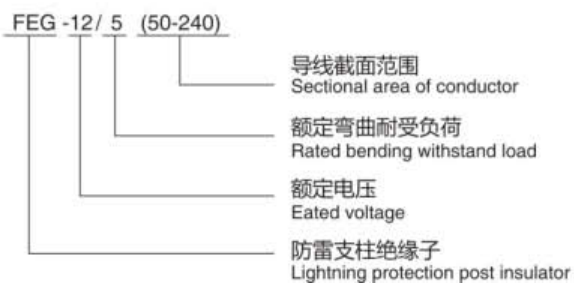
技术参数表 Main technical parameters

规格型号 Spec&Type	额定 电压(kV) Rated voltage	绝缘导 线截面 mm ²	雷电全波 冲击耐受 电压 (峰值) KV	1min 工频耐受电压 (有效值) KV		工频电弧 电流 (有效值) KA	额定弯曲 耐受负荷 KN	最小公称 爬电距离 mm	备注
				干	湿				
FEG-12/5A	6-12KV	50/240	75	42	30	12.5	5	360	穿刺式
FEG-12/5B	6-12KV	50/240	75	42	30	12.5	5	360	非穿刺式

备注：1.如钢脚安装尺寸不同的，请在订货时注明

2.如导线绝缘层厚度不在规定的范围内，切勿采用穿刺型产品否则可能引起电气接触不良或损伤导线。

产品型号说明 Mode Description



使用条件

- 1.环境温度 -45°C ~ $+50^{\circ}\text{C}$ 。
- 2.海拔高度不大于3000M。
- 3.电源频率为50-60HZ。
- 4.最大风速不超过35M/s。
- 5.地震强度为8度以下的地区。

结构特点

- 1.本产品分穿刺式和非穿刺式（剥除绝缘层）二种，其主要由绝缘护置、夹线铝合金金具、复合绝缘子、引弧棒和下钢脚等组成。
- 2.引弧棒和夹线金具装配成一体，当雷电发生时，引弧棒和下钢脚之间形成短路通道，引起闪络放电，接续的工频电弧移动到引弧棒和下脚之间钢燃烧，以保护导线免于烧伤。因引弧棒绕开伞裙并调至最佳放电间隙，放电效果更好，并能防止绝缘子伞裙烧坏。
- 3.夹线金具有穿刺式的刺齿构造，刺齿可拆卸，剥皮或不剥皮用途可选择。刺齿采用比铝合金强度更高导电性能铜合金材料，表面经过电（渗）渡处理以防止铜铝结合时氧化，这样铜铝导线都可使用。
- 4.采用复合材料制作的防雷绝缘子比瓷绝缘子的绝缘性能好，并且其爬电距离大，提高了绝缘子的防污秽水平。
- 5.已考虑到防止鸟类对架空导线造成短路危害的独特结构。
- 6.能耐受5次左右工频大电流电弧的烧灼。

安装方法

- 1.防雷支柱绝缘子的夹线槽应对准导线平行方向安装在横担上，拧紧钢脚螺母，等同传统的绝缘子安装方法，把引弧棒朝向横担的（距离横担最远处）远处侧；引弧棒朝向一个方向，最好是朝向负荷侧；
- 2.穿刺式的夹线方式有2种：（1）力距螺母的紧固方法：将绝缘导线尽量平行卡进线夹槽内，先用手拧紧力矩螺母，再用套筒扳手交替均匀拧紧至力距螺母顶端脱落为止。（2）根据导线截面及天气温度设定扭力扳手值 20-35Nm,用扭力扳手交替、对称拧紧2个压力螺母。用肉眼检查导线绝缘层贴紧线夹弧槽。看不见刺齿根部即可，然后拧紧备紧螺母，防止压力螺母松动；
- 3.非穿刺式的夹线方式为：绝缘导线剥开一段约65-80mm缠绕上铝包带嵌入绝缘子夹线金具上，用扳手把压紧螺母拧紧带动压块座压紧导线即可，绝缘护置装配在夹线金具的外部。（具体请参照产品安装说明书）

引用技术标准

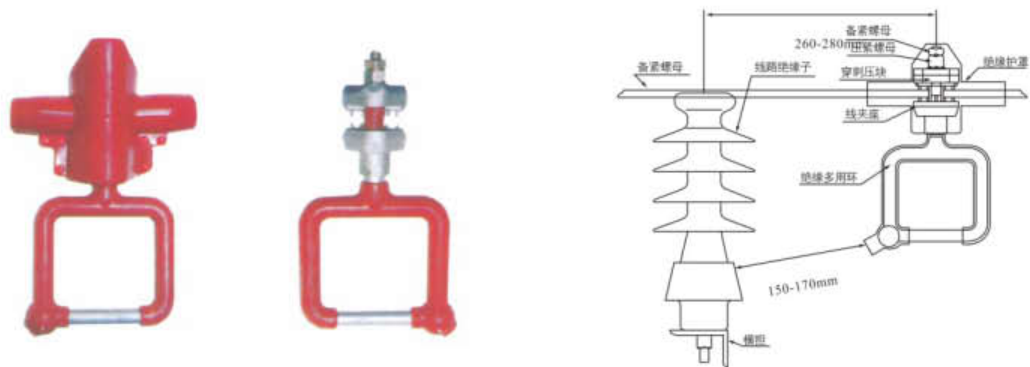
- GB311.1-1997 《高压输变电设备的绝缘配合》
- JB/T5892-1991 《高压线路用有机复合绝缘子技术条件》
- DL/T620-1997 《交流电气装置的过电压保护和绝缘配合》
- JB/T8177-1999 《绝缘子金具附件热镀锌层通用技术条件》

FDL 型防雷验电接地环 穿刺式/非穿刺式

FDL Type Lightning-Protection Electric-Check Piercing

用途 Application

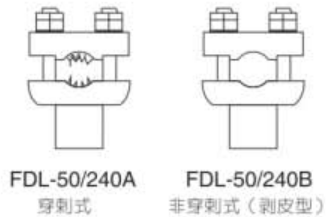
FDL型防雷验电接地环是一种安装在线路绝缘子负荷侧，专门用于防止10-20kv架空绝缘导线雷击断线以及用于检修施工时的验电和接地装置的新型二合一产品。目前配网10-20kv及以下架空线路普遍采用绝缘导线，但架空绝缘线路先天不足的耐雷水平，又令人烦恼不止。因为电杆侧常悬挂着验电接地环、故障指示器、防弧线夹、分支线夹等一连串，造成线路凌乱不雅观。本产品安装方便，合二为一，使线路简洁并降低成本，为电力部门提供更经济有效的产品。根据用户需要采用剥皮型的非穿刺式防雷验电接地环型号为：FDL-50/240B;穿刺式防雷验电接地环型号为：FDL-50/240A.



技术参数表 Main technical parameters

规格型号 Spec&Type	额定电压(kV) Rated voltage	绝缘导线截面 mm²	雷电全波冲击耐受电压 (峰值) KV	1min 工频耐受电压 (有效值) KV		工频电弧电流 (有效值) KA	备注
				干	湿		
FDL-50/240A	12	50/240	75	42	30	12.5	穿刺式
FDL-50/240B	12	50/240	75	42	30	12.5	非穿刺式

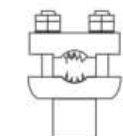
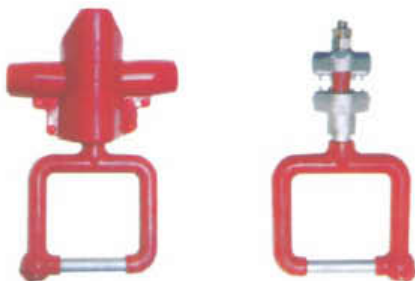
产品型号说明 Mode Description



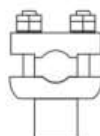
结构特点

- 1.主要由绝缘护罩、压紧螺母、压块、线夹座和绝缘多用环等组成
- 2.绝缘护罩采用有机复合材料制成，具有良好的绝缘性能，抗老化性能和阻燃性能。
- 3.多用环是把引弧棒和验电接地环合二为一的零件。当雷击发生时，引弧棒和绝缘子金属件之间放电，使续流工频电弧移动到引弧棒上烧灼，从而保护绝缘导线不受损伤。当检修施工时，可用于验电及临时接地装置。
- 4.本产品具有多种用途，安装施工方便，性能可靠，可极大地减轻操作工人的劳动强度。
- 5.能耐受5次左右工频大电流电弧的烧灼。

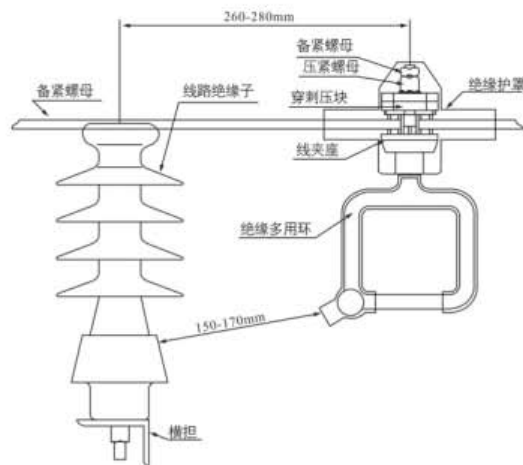
FDL 型防雷验电接地环 穿刺式/非穿刺式 FDL Type Lightning-Protection Electric-Check Piercing



FDL-50/240A
穿刺式



FDL-50/240B
非穿刺式（剥皮型）



放电间隙安装尺寸表：

安装支柱型号	放电间隙/mm
P-10绝缘子	125mm-135mm
P-15绝缘子	140mm-150mm
P-20绝缘子	150mm-170mm
PS-15绝缘子	150mm-170mm
PS-20绝缘子	170mm-180mm
S-210绝缘横担绝缘子	270mm-300mm

安装方法

1. 本产品安装在线路绝缘子（例如PS-15高压线路柱式绝缘子）的负荷侧，剥皮型的按示意图1要剥开绝缘层70mm左右，把防雷验电接地环紧固在线上；穿刺式的夹线方式有2种，（1）力矩螺母的紧固方法；将绝缘导线尽量平行卡进线夹槽内，先用手拧紧力矩螺母，再用套筒扳手交替均匀拧紧至力矩螺母顶端脱落为止。（2）根据导线截面积及天气温度设定扭力扳手扭力值；26-35Nm,用扭力扳手交替、对称拧紧2个压力螺母，用肉眼检查导线绝缘层贴紧线夹弧槽，看不见刺伤根部即可。然后拧紧紧备螺母，防止压力螺母松动；
2. 安装时按示意图1及放电间隙安装尺寸表调整本产品 and 线路绝缘子之间的距离；
3. 绝缘护罩安装在线夹座的外部，用固定扣固定绝缘护罩。（具体请参照产品安装说明书）

注意事项：

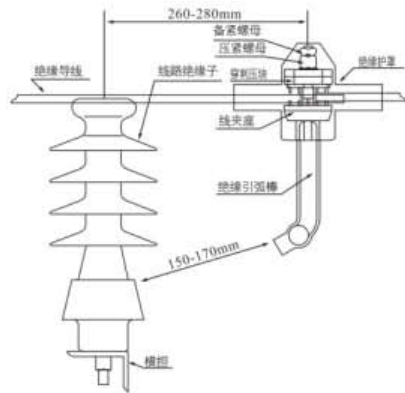
1. 在雷雨季节前后应对线路进行巡查，检查产品是否处于正常的安装状态，或有无损坏，必要时应予以调整或更换。

如在线路起始端安装带自动重合闸的继电保护装置，调节好参数可有效的减少线路停电次数。

CFH型防弧线夹 穿刺式/非穿刺式 CFH Type Arc-protection Connector

用途 Application

CFH 型防弧线夹是一种新型结构的产品，其主要安装在线路绝缘子的负荷侧，具有防止10-20kv架空导线雷击断线功能。安装施工方便，性能可靠，为电力部门提供了一条投资少收效大的有效措施。根据用户需要采用剥皮型的非穿刺式线夹型号为：CFH-50/240B,穿刺式防弧线夹型号为：CFH-500/240A



技术参数表 Main technical parameters

规格型号 Spec&Type	额定 电压(kV) Rated voltage	绝缘导 线截面 mm ²	雷电全波 冲击耐受 电压 (峰值) KV	1min 工频耐受电压 (有效值) KV		工频电弧 电流 (有效值) KA	备注
				干	湿		
CFH-50/240A	12	50/240	75	42	30	12.5	穿刺式
CFH-50/240B	12	50/240	75	42	30	12.5	非穿刺式

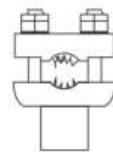
产品型号说明 Mode Description

C FH - 50/240

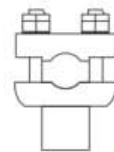
导线截面范围
Sectional area of conductor

防弧 Anti-arc

穿刺线夹
Piercing connector



CFH-50/240A
穿刺式

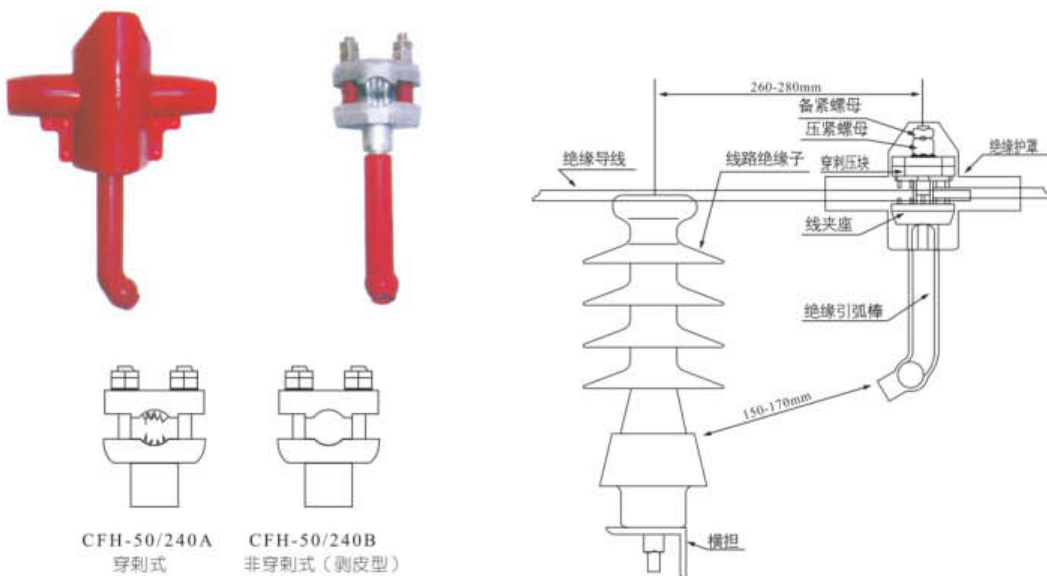


CFH-50/240B
非穿刺式(剥皮型)

结构特点

- 主要由绝缘护罩、压紧螺母、穿刺压块、线夹座、引弧棒和绝缘套管等组成。
- 引弧棒和线夹座装配链接成一体，当雷击发生时，引弧棒和绝缘子（或横担）金属件之间放电，使续流工频电弧移动到引弧棒上烧灼，从而保护绝缘导线不受损伤。
- CFH-50/240 型穿刺式防弧线夹具有穿刺式的刺齿构造，安装施工方便，不需剥除绝缘导线绝缘层，避免线芯进水和腐蚀，减轻操作人员的劳动强度。
- 能耐受5次左右工频大电流电弧的烧灼。

CFH型防弧线夹 穿刺式/非穿刺式 CFH Type Arc-protection Connector



放电间隙安装尺寸表：

安装支柱型号	放电间隙/mm
P-10绝缘子	125mm-135mm
P-15绝缘子	140mm-150mm
P-20绝缘子	150mm-170mm
PS-15绝缘子	150mm-170mm
PS-20绝缘子	170mm-180mm
S-210瓷横担绝缘子	270mm-300mm

安装方法

1. 本产品安装在线路绝缘子（例如P-15柱式绝缘子）的负荷侧，剥皮型的按图2要剥开绝缘层65-80mm左右把防弧线夹紧固在导线上；穿刺式的夹线方式有2种，（1）力矩螺母的紧固方法；将绝缘导线尽量平行卡进线夹槽内，先用手拧紧力矩螺母，再用套筒扳手交替均匀拧紧至力矩螺母顶端脱落为止。（2）根据导线截面积及天气温度设定扭力扳手扭力值；26-35Nm,用扭力扳手交替、对称拧紧2个压力螺母，用肉眼检查导线绝缘层贴紧线夹弧槽，看不见刺齿根部即可。然后拧紧备紧螺母，防止压力螺母松动；
2. 安装时按图2及放电间隙安装尺寸表调整本产品和线路绝缘子之间的距离
3. 绝缘护套安装在线夹座的外部，用固定扣固定绝缘护套。（具体请参照产品安装说明书）

穿刺型防雷绝缘子

概述 General

随着架空配电线路绝缘化。传统设计的绝缘线路，难承受直接雷或感应雷的作用，雷击断绝缘线已经成为电力系统面临的又一个难题。穿刺型防雷针式绝缘子集金属氧化物避雷器特性与针式绝缘子机理一体。设计合理。有效地解决了该难题。其具有复合绝缘子良好的憎水性、抗老化性、耐电蚀性和机械强度。同时具有防雷功能，且重量轻、安装方便（穿刺结构、安装时无需剥除绝缘层），适用范围广，其底部安装尺寸与相应的针式绝缘子相同，具有很大的推广价值。

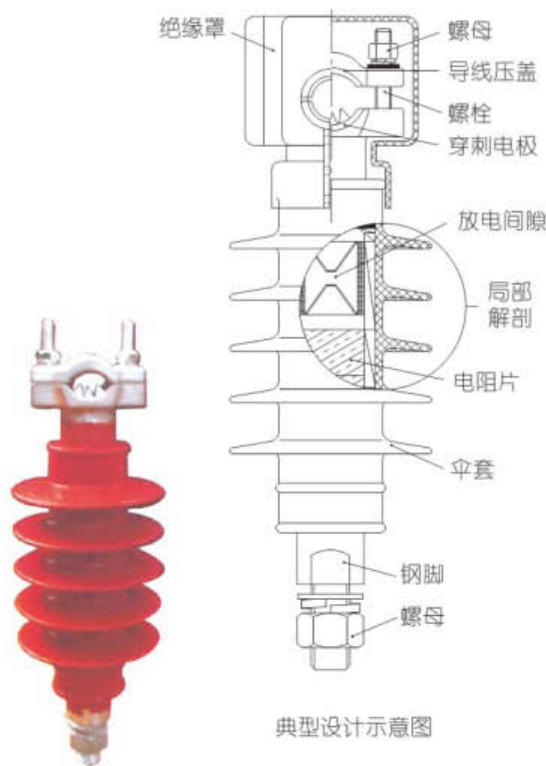
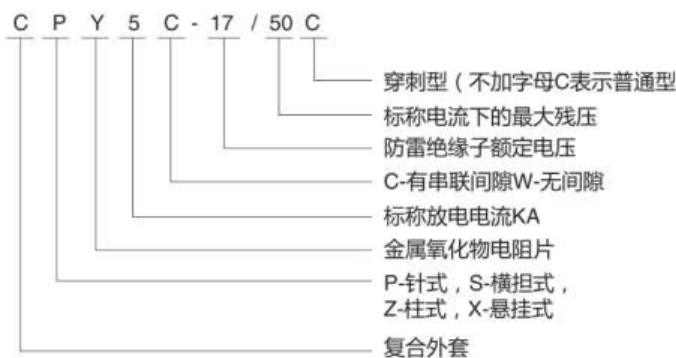
原理

本产品适用于配电 6kV、10kV 绝缘导线（穿刺型）和裸导线（普通型），内部结构采用了非线性伏-安特性十分优异的氧化锌电阻片和带间隙的高压电阻器；在间隙上采用辅助电极，降低了间隙放电分散性；在正常状态下，防雷绝缘子的间隙使电阻片与系统隔离并处于较低的电场下，不参与防雷运行，延长了使用寿命；只有超过规定电压出现时，间隙才能被击穿，电阻片参与工作，释放过电压，避免了无间隙型频繁动作的情况。

引用技术标准

- GB 311.1-1997 《高压输变电设备的绝缘配合》
- JB/T9672.2-2005 《35kV及以下交流系统用有串联间隙金属氧化物避雷器》
- GB11032-2000 《交流无间隙金属氧化物避雷器》
- JB/T8952-2005 《交流系统用复合外套无间隙金属氧化物避雷器》
- JB/5892-1991 《高压线路用有机复合绝缘子技术条件》
- JB/T8177-1999 《绝缘子金属热镀锌层通用技术条件》
- DL/T620-1997 《交流电气装置的过电压保护和绝缘配合》

产品型号说明



技术参数表 Main technical parameters

避雷器型号 MOA Type	系统额定电压kV kV (r.m.s)	避雷器额定电压 kV (r.m.s)	波前冲击放电的波前陡度 KV/ μ s	波前冲击放电电压 $\geq$ kVp	1.2/50 μ s冲击放电电压 $\geq$ kVp	工频放电电压 $\geq$ kV	方波通流容量 (2ms) A	8/20 μ s 5kV标称放电电流残压 kA	绝缘电阻 $\geq$ M Ω	额定弯曲负荷 kN
FPY5C-17/50C	10	17	106	62.5	55	28	100	50	2500	3
FPY5C-17/50	10	17	106	62.5	55	28	100	50	2500	3

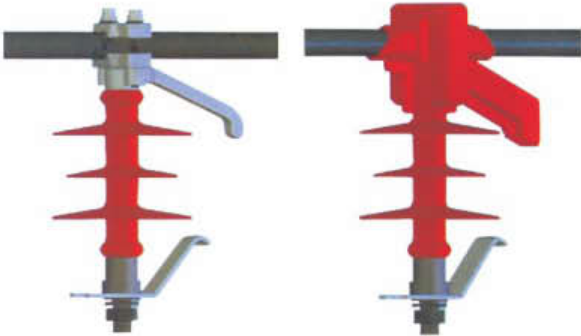
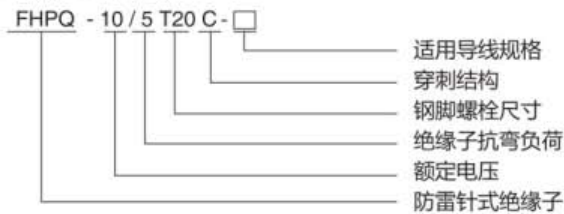
备注：以上常规型号对应10kV标准绝缘电缆的夹线范围为120~240mm²，如有不同要求请在订货时注明。

穿刺型防雷针式绝缘子

原理与特点

穿刺型防雷针式绝缘子将外间隙引弧防雷原理运用于针式绝缘子，适用于配电10KV架空绝缘导线。采用了专利设计的穿刺型结构和独特的引弧装置结构，性能优良、安装方便、简洁美观），既起到针式绝缘子的作用，又具有防雷击断线功能，具有很大的推广价值。

产品型号说明



穿刺型防雷针式绝缘子技术参数及选型表

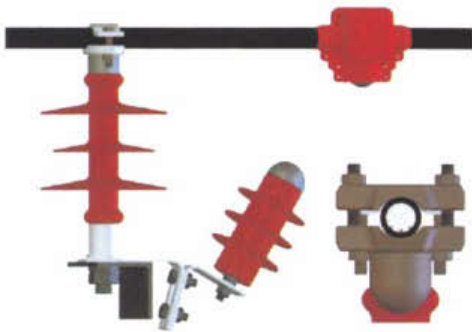
规格型号 Spec&Type	额定 电压 (kV)	额定抗弯 负荷 kN	钢脚安装 尺寸 mm	工频耐受 电压 kV	雷电冲击 50%放电 电压kV	夹线范 围 (mm)	适用导线规格	导体直径 (mm)	绝缘层 外径(mm)	适用力矩 (N*m)
FHPQ-10/5T20C-1	10	5	20	≥45	≤120	Φ 16~22	JKLY-50~120	8.5~1.3	16.1~21	23
							JKLGY-35/6~95/20	7.75~13.18	16.6~22	
FHPQ-10/5T20C-2	10	5	20	≥45	≤120	Φ 22~28	JKLY-120~240	14.6~18.4	22.6~26.4	26
							JKLGY-120/7~185/45	13.718~18.62	22.6~27.4	
FHPQ-10/5T20C-3	10	5	20	≥45	≤120	Φ 26~30	JKLY-300	20.6	28.6	28
							JKLGY-240/30~240/40	20.52~20.58	29.3~29.4	

备注：1、如钢脚安装尺寸不同时，请在订货时注明。2、如果用于裸导线，型号不要带字母C。3、其它产品性能同同规格的复合绝缘子。4、如导线绝缘层厚度不在规定的范围内，请在订货时注明，切勿误用，否则可能引起电气接触不良或损伤导线。

穿刺型外间隙避雷器

原理与特点

穿刺型外隙避雷器适用于配电10kv架空绝缘导线，其采用了专利设计的穿刺型引弧头结构，可穿透导线绝缘层形成电气连接；引弧头下端与避雷器上端的引弧头相对，形成一个间距60~130mm的串联外放电间隙，其距离通过避雷器下部的两块安装板相对移动来调节，在正常状态下，高阻性的避雷器电阻片和放电间隙不动作；只有超过规定雷电过电压出现时，放电间隙才能被击穿，形成短路通道，接续的工频电弧便在外间隙间燃烧，释放过电压能量，以保护导线免于烧伤。电压释放后，避雷器电阻片恢复高阻性，间隙放电停止。

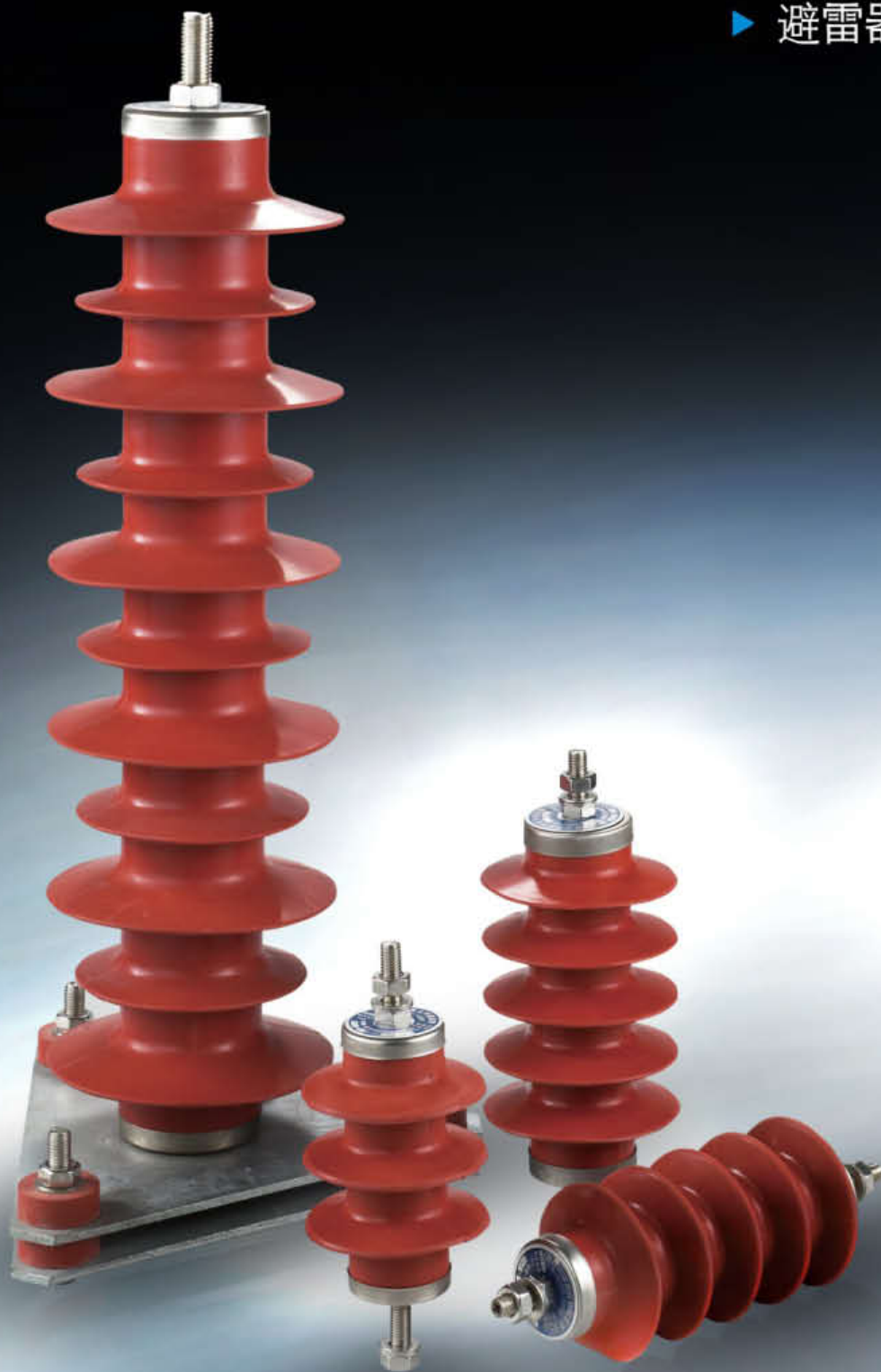


穿刺型外间隙避雷器技术参数及选型表

产品型号	系统 标称 电压kV	避雷器 额定电压 kV	直流参考 电压kV	工频耐受 电压kV	雷电冲击50 % 放电电压kV	夹线范围 (mm)	适用导线规格	导体直径 (mm)	绝缘层 外径 (mm)	适用 力矩 (N*m)
FHY5C-10C-1	10	13	≥20	≥80	≤160	Φ 16~22	JKLY-50~120	8.8~13	16.1~21	23
							JKGY-35/6~95/20	7.75~13.18	16.6~22	
FHY5C-10C-2	10	13	≥20	≥80	≤160	Φ 22~28	JKLY-120~240	14.6~18.4	22.6~26.4	26
							JKGY-120/7~185/45	13.718~18.62	22.6~27.4	
FHY5C-10C-3	10	13	≥20	≥80	≤160	Φ 26~30	JKLY-300	20.6	28.6	28
							JKGY-240/30~240/40	20.52~20.58	29.3~29.4	

ARRESTER

▶ 避雷器



避雷器系列 Arrester Series

基本原理 Basic Principle

避雷器是一种过电压保护器，主要用于保护电力系统，铁道电气化系统，通讯系统中的各种电气设备（变压器、开关、电容器、阻波器、互感器、发电机、电动机、电力电缆等）免遭大气过电压，操作过电压和工频暂态过电压等损坏，是电力系统绝缘配合的基础。金属氧化物避雷器的其核心元件（电阻片）采用以氧化锌为主的先进配方，具有十分优异的非线性（伏—安）特性，即在正常工作电压之下，通过的电流只有微安级，当遭受到过电压时，通过的电流瞬间达到数千安培，使避雷器处于导通状态，释放过电压能量，从而有效地限制了过电压对输变电设备的侵害。传统的碳化硅避雷器有因陡波放电延迟而引起的陡波放电电压高，操作波放电分散性大导致操作波放电电压高等缺点。而氧化锌避雷器具有良好的陡波放电延迟而引起的陡波放电电压高、操作波放电分散性大导致操作波放电电压高等缺点。而氧化锌避雷器具有良好的陡波响应特性，能使陡波电压无延迟，操作残压低，没有放电分散性等优点。使得陡波、操作波下的保护欲度大大提高，而且在绝缘配合方面，能够做到陡波、雷电波、操作波的保护裕度接近一致，从而对电力设备提供最佳的保护。复合外套金属氧化物避雷器，采用整体模压成型、两头包封工艺，密封性能良好、防爆性能优良，耐污秽免清洗并能减少雾天湿闪发生，耐电蚀、抗老化，体积小、重量轻，便于安装和维护，是瓷套避雷器的更新换代产品。

Arrester is a kind of overvoltage protector mainly applied for the protection of various electrical appliances (such as transformer ,switch ,capacitor ,trap, mutual inductor ,generator ,motor and power cable etc.) in power system .railway electrification system and communication system from being damaged by atmosphere overvoltage, operation overvoltage and power frequency temporary overvoltage etc. The arrester is the basis of insulation coordination in power system. The core elements of metal oxide arrester (resistor disc) applies an advanced formula with zinc oxide as the main material and has an outstanding nonlinear properties (voltage-ampere).That is, under the normal operating voltage, the current passing through is only on microampere level. When overvoltage is incurred ,the current passing through can be thousands of amperes instantly and the arrester is switched into conduction to release the energy of overvoltage. By this means the damage caused by overvoltage on the electric transmission and transformation equipments can be effectively restrained . The traditional silicon carbide arrester has high steep wave discharging voltage caused by steep wave discharging and the operation wave discharging voltage is high caused by discharging decentrality .While the zinc oxide arrester has good steep wave response properties and make no delay on steep wave voltage and provide low residual voltage during operation; and also has the advantage of no discharging decentrality .The arrester can greatly improve the protective margin of the steep wave and operation wave. And on insulation coordination, the proactive margins of steep wave, lightning wave and operation wave are nearly consistent and best protection can be provided for the power equipments. Composite coating metal oxide arrester applies integrated extruding shaping and both-end envelopment techniques and can provide high performances of sealing and anti-explosion ,pollution resistance, free of cleaning and reducing the wet flashover in foggy conditions .The product is also featured by electrical erosion resistance ,aging resistance ,small volume, light weight and easy installation and maintenance; and is the upgraded new generation product of porcelain sheath arrester.

技术标准 Technical Standard

产品生产执行的标准为GB11032-2000(eqv IEC60099-4:1991)《交流无间隙金属氧化物避雷器》、JB/T8952-2005《交流系统用复合外套无间隙金属氧化物避雷器》

The applicable standards of the product include GB11032-2000(eqv IEC60099-4:1991) Alternating non-clearance current metal oxide lightning arrester and JB/T8952-2005AC System composite Coating Non-clearance Metal Oxide Lightning Arrester.

使用条件 Environmental Conditions for Application

电源频率 Power supply frequency	48Hz-62Hz
环境温度 Ambient temperature	-40°C~+40°C
最大风速 Maximum wind speed	≤35m/s
海拔高度 Altitude	≤2000m
地震烈度 Earthquake intensity	≤8
覆冰厚度 Ice thickness	≤10mm

1. 长期施加的工频电压不超过其持续运行电压。
2. 太阳光的辐射：太阳最大照射（1.1kW/m²）的影响已经在产品形式中予以考虑，如果避雷器附近有其它热源，壁雷器的使用需供需双方协商。
1. Long-term applied power frequency voltage does not exceed its constant operation voltage.
2. Sunray radiation: The impact of a maximum sunray(1.1kW/m²)has been taken into account in the product form testing. If other heat resources exist around the arrester, please consult the manufacture for the application of arrester.

产品型号说明 Type Specifications

YH	5	W	S	5	-	17	/	50	□	
										附加特征 W-防污 G-高原 K-抗震 L-脱离器 Additional features: W-pollution resistance G: plateau L: quakeproof
										标称放电电流下最大残压KV(峰值) Maximum residual voltage under nominal discharging current KV(peak value)
										避雷器额定电压KV (有效值) Arrester rated voltage KV(effective value)
										设计序号 Design serial number
										使用场所 S:配电Z:电站 R:电容器组 X-线路 T: 铁道 D-电机型 O-用于油中 L:直流 Application location: S: distribution Z: power plant R: capacitor X: circuit T: railway D: motor type O: in oil L: direct current
										结构特征 W-无间隙 C: 串联间隙 R:并联间隙 Construction feature W: without clearance C: series connection clearance R: parallel connection clearance
										标称放电电流KA Nominal discharging current KA
										复合外套金属氧化物避雷器(HY为老型号) Y为瓷外套金属氧化物避雷器 Composite casting metal oxide arrester (HY for old types) Y for porcelain casing metal oxide arrester

产品特点 Product Features

1. 体积小、重量轻、耐碰撞、运输无碰损、安装灵活，适合在开关柜内使用；
 2. 特殊结构，整体模压成型，无气隙，密封性能好，防潮防爆；
 3. 爬电距离大，憎水性好，耐污能力强，性能稳定，减少运行维护；
 4. 独特配方的氧化锌电阻片，泄露电流小，老化速度慢，使用寿命长。
 5. 实际直流参考电压，方波通流容量和大电流耐受值都高于国家标准。
1. Small in size ,light in weight ,durable in collision ,clash and breakage free in transportation, easy in installation, suitable for application in the switchboard;
 2. Special structure, integrated extruding shaping ,without air gap, good sealing performance, damp prevention and explosion prevention;
 3. Long creepage distance, good hydrophobicity performance, strong pollution resistance abilities ,and stable performance, reducible in operating maintenance;
 4. Zinc oxide resistor disc in special formula, small leakage current, slow aging speed,long service life
 5. The actual DC reference voltage ,square wave discharge capacity and heavy current tolerance value are all higher than the state standards.

用户须知 User Notice

1. 避雷器在安装使用前，应存放在清洁、干燥的房间，不得收到腐蚀性气体或液体的腐蚀。
 2. 避雷器在投入运行前，应作预防性试验，在投入运行后，也应定期（10KV及以下避雷器5年一次，35KV及以上避雷器2年一次）做如下试验并参照附表与运行前的数据进行对比；
 - a. 测量避雷器的绝缘电阻；
 - b. 测量避雷器直流1mA参考电压；
 - c. 测量0.75倍直流1mA参考电压下的泄露电流。
1. Before installation, the arresters shall be stored in clean and dry rooms and kept away form the corrosions by corrosive gas or liquid.
 2. Before put into operation, preventative testing shall be made on the arrester. And after the arrester has been put into operation, regular testing shall be made as follows and comparison shall be made with the data before the operation according to the attached table.(Every 5 years for arrester of 10KV or under, and every 2 years for arrester of 35KV and above)
 - a. Measure the insulation resistance of the arrester;
 - b. Measure the reference voltage of the arrester under the direct current of 1mA
 - c. Measure the leakage current under the reference voltage of 0.75 time direct current of 1mA

YH10W,YH5W出口型复合氧化锌避雷器 Zinc Oxide Lightning Arrester (export Type)



用途说明 Usage& Feature

氧化锌避雷器是交流电力系统的电气设备免受大气过电压和操作过电压危害的保护设备。

The Zinc Oxide lightning arrester protects the electrical equipments in AC power systems against being damaged by atmospheric over-voltage and operational over-voltage.

5kA无间隙避雷器 Nominal Discharge Current 5kA Metal-oxide Lightning Arrester Without Gaps(export)

型号 Type	额定 电压 Rated voltage kV(rms)	最大持续 运行电压 Maximum continuous operation voltage kV(rms)	残压 Max. Residual voltage			方波冲击电流耐受 2000μs Square wave current impulse withstand A(crest)	大电流耐受 4/10μs High current impulse kA(crest)
			陡坡冲击 电流 Steep current impulse kV(crest)	30/60 μs 操作冲击电流 Switching current impulse kV(crest)	8/20 μs 雷电冲击电流 Lightning current impulse kV(crest)		
YH5W-3	3	2.55	9.5	7.7	9	100	65
YH5W-6	6	5.1	19.0	15.4	18	100	65
YH5W-9	9	7.65	28.5	23.1	27	100	65
YH5W-10	10	8.3	36.0	27.0	30	100	65
YH5W-11	11	9.5	38.5	30.0	33	100	65
YH5W-12	12	10.2	38.0	30.8	36	100	65
YH5W-15	15	12.7	47.5	38.5	45	100	65
YH5W-18	18	15.3	57.0	46.2	54	100	65
YH5W-21	21	17.0	66.5	53.9	63	100	65
YH5W-24	24	19.5	76.0	61.6	72	100	65
YH5W-27	27	21.9	85.5	69.3	81	100	65
YH5W-30	30	24.4	95.0	76.5	90	100	65
YH5W-33	33	26.8	104.0	84.7	99	100	65
YH5W-36	36	29.0	114.0	92.7	108	100	65
YH5W-42	42	34.1	132.3	100.1	126	100	65

10kA无间隙避雷器 Nominal Discharge Current 10kA Metal-oxide Lighting Arrester Without Gaps (export)

型号 Type	额定电压 Rated voltage kV(rms)	最大持续运行电压 Maximum continuous operation voltage kV(rms)	残压 Max. Residual voltage			方波冲击电流耐受 2000μs Square wave current impulse withstand A(crest)	大电流耐受 4/10μs High current impulse kA(crest)
			陡坡冲击电流 Steep current impulse kV(crest)	30/60 μs 操作冲击电流 Switching current impulse kV(crest)	8/20 μs 雷电冲击电流 Lightning current impulse kV(crest)		
YH10W-3	3	2.55	9.5	7.7	9	250	100
YH10W-6	6	5.1	19.0	15.4	18	250	100
YH10W-9	9	7.65	28.5	23.1	27	250	100
YH10W-10	10	8.3	36.0	27.0	30	250	100
YH10W-11	11	9.5	38.5	30.0	33	250	100
YH10W-12	12	10.2	38.0	30.8	36	250	100
YH10W-15	15	12.7	47.5	38.5	45	250	100
YH10W-18	18	15.3	57.0	46.2	54	250	100
YH10W-21	21	17.0	66.5	53.9	63	250	100
YH10W-24	24	19.5	76.0	61.6	72	250	100
YH10W-27	27	21.9	85.5	69.3	81	250	100
YH10W-30	30	24.4	95.0	76.5	90	250	100
YH10W-33	33	26.8	104.0	84.7	99	250	100
YH10W-36	36	29.0	114.0	92.7	108	250	100
YH10W-42	42	34.1	133.0	100.0	126	250	100
YH10W-48	48	39.0	152.0	126.0	150	400	100
YH10W-54	54	43.0	171.0	139.0	162	400	100
YH10W-60	60	48.0	208.0	160.0	180	400	100
YH10W-66	66	53.4	230.0	172.0	198	400	100

备注：“YH”型号为复合外套氧化锌避雷器，如果是瓷套避雷器，删去掉型号的“H”

Note: “YH” is the polymeric housing metal oxide Lighting arrester, if it is porcelain housing, then without “H”

Y5C,Y10C出口型串联间隙氧化锌避雷器
Porcelain Lighting Arrester(export Type)



5kA串联间隙避雷器 Nominal discharge current 5kA porcelain housed metal-oxide lightning arrester with series gap(export)

型号 Type	额定电压 Rated voltage kV(rms)	最大持续运行电压 Maximum continuous operation voltage kV(rms)	放电电压 Sparkover voltage(KV)		8/20 μs 雷电冲击电流 Lightning current impulse kV(crest)	方波冲击电流耐受 2000μs Square wave current impulse withstand A(crest)	大电流耐受 4/10μs High current impulse kA(crest)
			工频 Power frequency > kV(r.m.s)	1.2/50 μs 雷电冲击 Lightning current > kV(crest)			
Y5C-3	3	2.55	5.0	7.8	9	100	65
Y5C-6	6	5.1	10.0	15.5	18	100	65
Y5C-9	9	7.65	16.5	24.5	27	100	65
Y5C-10	10	8.4	18.0	27.2	30	100	65
Y5C-12	12	10.2	21.0	32.6	36	100	65
Y5C-15	15	12.7	25.0	38.8	45	100	65
Y5C-18	18	15.3	31.0	48.1	54	100	65
Y5C-21	21	17.0	34.0	52.7	63	100	65
Y5C-24	24	19.2	39.0	60.5	75	100	65
Y5C-27	27	21.9	45.0	69.8	81	100	65
Y5C-30	30	24.4	50.0	77.5	90	100	65
Y5C-33	33	26.8	55.0	85.3	99	100	65
Y5C-36	36	29.0	60.0	93.0	108	100	65
Y5C-42	42	34.1	70.0	108.5	126	100	65

10kA串联间隙避雷器 Nominal Discharge Current 10kA Porcelain Housed Metal-oxide Lightning Arrester with series gap(export)

型号 Type	额定电压 Rated voltage kV(rms)	最大持续运行电压 Maximum continuous operation voltage kV(rms)	放电电压 Sparkover voltage(KV)		8/20 μs 雷电冲击电流 Lightning current impulse kV(crest)	线路放电等级 Line discharge class	大电流耐受 4/10μs High current impulse kA(crest)
			工频 Power frequency > kV(r.m.s)	1.2/50 μs 雷电冲击 Lightning current > kV(crest)			
Y10C-3	3	2.55	5.0	7.8	9	1	100
Y10C-6	6	5.1	10.0	15.5	18	1	100
Y10C-9	9	7.65	16.5	24.5	27	1	100
Y10C-10	10	8.40	18.0	27.2	30	1	100
Y10C-12	12	10.2	21.0	32.6	36	1	100
Y10C-15	15	12.7	25.0	38.8	45	1	100
Y10C-18	18	15.3	31.0	48.1	54	1	100
Y10C-21	21	17.0	34.0	52.7	63	1	100
Y10C-24	24	19.2	39.0	60.5	75	1	100
Y10C-27	27	21.9	45.0	69.8	81	1	100
Y10C-30	30	24.4	50.0	77.5	90	1	100
Y10C-33	33	26.8	55.0	85.3	99	1	100
Y10C-36	36	29.0	60.0	93.0	108	1	100
Y10C-42	42	34.1	70.0	108.5	126	1	100

备注：“Y” 型号为复合外套氧化锌避雷器，如果是瓷套避雷器，删去掉型号的 “YH”

Note: “Y” is the polymeric housing metal oxide Lighting arrester, if it is porcelain housing, then without “YH”

低压型氧化锌避雷器

Zn Oxide Anester Of Low Voltage Type



避雷器 型号 MOA type	系统额定 电压 System rater voltage KV(ms)	避雷器 额定电压 Moa R.V KV(ms)	持续运行 电压 MCOV KV (rms)	直流参 考电压 DC (U1mA) <KV(p)	陡波冲击 电流残压 Steep current impulse >KV	雷电冲击 电流下残压 Lighting current impulse >KV	操作冲击电 流下残压 DC (U1mA) <KV(p)	方波通流 容量 Rectangular current impulse (2ms)A	避雷器 额定电压 High current impulse KA
YH1.5W- 0.28/1.3	0.22	0.28	0.24	0.6		1.3		75	25
YH1.5W- 0.5/2.6	0.38	0.5	0.42	1.2		2.6		75	25

配电型氧化锌避雷器

Zn Oxide Arrester Of Distribution Type



避雷器 型号 MOA type	系统 额定电压 System rater voltage KV (rms)	避雷器 额定电压 Moa R.V KV (rms)	持续 运行电压 MCOV KV (rms)	直流参 考电压 DC (U1mA) <KV (p)	陡波冲 击电流 残压 Steep current impulse >KV	雷电冲击 电流下残压 Lighting current impulse >KV	操作冲击 电流下 残压 Switching current impulse >KV	方波通 流容量 Rectangular current impulse (2ms) A	大电流 冲击 耐受 High current impulse KA
YH5W-3.8/15	3	3.8	2	7.5	17.3	15	12.8	75	40
YH5WS-5/15	3	5	4	8	17.3	15	12.8	100	65
YH5WS-7.6/30	6	7.6	4	15	34.5	30	25.5	75	40
YH5WS-10/30	6	10	8	15	34.5	30	25.5	100	65
YH5WS-12.7/50	10	12.7	6.6	25	57.5	50	38.5	75	40
YH5WS-17/50	10	17	13.6	25	57.5	50	38.5	100	65

瓷外套金属氧化物避雷器 Porcelain Housed Metal-Oxide Surge Arrester



避雷器 型号 MOA type	标称 电压 Nominal voltage KV (rms)	避雷器 额定电压 Moa R.V KV (rms)	持续 运行电压 MCOV KV (rms)	直流参 考电压 DC (U1mA) <KV (p)	标称放电 电流下残压 Nominal residual voltage >KV	方波通 流容量 Rectangular current impulse (2ms) A	重量 Weight	高度 H (mm)	备注 Remark
Y5WS1-3.8/17	3	3.8	2.0	7.5	17	75	2.0	205	配电型 Distrib- ution type
Y5WS1-7.6/30	6	7.6	4.0	15	30	75	2.4	205	
Y5WS1-12.7/50	10	12.7	6.6	25	50	75	2.7	245	
Y5WS1-5.0/17	3	5.0	3.5	7.5	17	75	2.0	205	
Y5WS1-10/30	6	10	7.0	15	30	75	2.2	205	
Y5WS1-17/50	10	17	11.5	25	50	75	2.7	245	
Y5WZ1-3.8/17	3	3.8	2.0	7.2	13.5	150	2.0	205	电站型 Power station type
Y5WZ1-7.6/27	6	7.6	4.0	14.4	27	150	2.2	205	
Y5WZ1-12.7/45	10	12.7	6.6	24	45	150	3.0	245	
Y5WZ1-42/134	35	42	23.4	73	134	400	70 45		
Y5WZ1-5.0/13.5	3	5.0	3.5	7.2	13.5	150	2.0	205	
Y5WZ1-10/27	6	10	7.0	14.4	27	150	2.2	205	
Y5WZ1-17/45	10	17	11.5	24	45	150	3.0	245	
Y5WZ1-51/134	35	51	40	73	134	400	70 45		

电站型氧化锌避雷器 Zn Oxide Arrester Of Power Station Type



YH5WZ-10/27



YH5WZ-17/45



YH5WZ-51/134



YH5WZ-51/134J



YH5WZ-51/134E



YH5WZ-51/134G



YH5WZ-51/134



YH5WZ-51/134J



YH10W-100/260



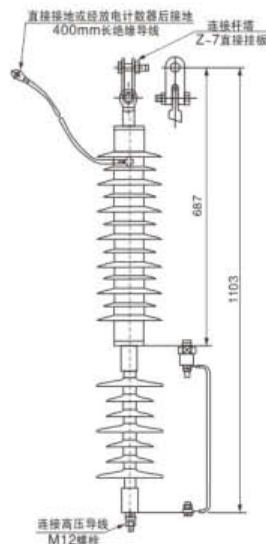
YH10W-100/260

使用场所 Service condition	型号 Type	避雷器 额定电压 MOA Rated voltage kV	系统标称电压 System nominal voltage kV	持续运行电压 Continuous operation voltage kV	直流1mA参考电压 DC Min U1mA reference voltage kV ≥	残压峰值 Residual voltage(kV) ≥			方波冲击电流 耐受2000μs Square wave current impulse withstand A	大电流 耐受4/10μs High current impulse A
						1/4 μs 陡坡冲击电流 Steep current impulse	8/20 μs 雷电冲击电流 Lightning current impulse	30/60 μs 操作冲击电流 Switching current impulse		
5KA电站 Substation (Z)	YH5WZ-3.8/13.5	3.8	3	3.2	7.2	14.5	13.5	11.5	200	65
	YH5WZ-7.6/27	7.6	6	4.0	14.4	31	27	23		
	YH5WZ-10/27	10	6	8.0	14.4	31	27	23		
	YH5WZ-17/45	17	10	13.6	24	51.8	45	38.3		
	YH5WZ-42/134	42	35	23.4	73	154	134	114	400	100
	YH5WZ-51/134	51		40.8	73	154	134	114		
	YH5WZ-52.7/134	52.7		42.2	73	154	134	114		
	YH5WZ-54/134	54		43.2	73	154	134	114		
	YH5WZ-84/221	84	66	67.2	121	254	221	188	600	100
	YH5WZ-90/224	90		72.5	130	258	224	190		
	YH5WZ-94/224	94		75.5	134	270	234	198		
	YH5WZ-96/250	96	110	75	140	287	250	212	600	100
	YH5WZ-100/260	100		78	145	299	260	221		
	YH5WZ-102/260	102		80	148	305	266	226		
	YH5WZ-108/281	108		84	157	323	281	239		
	YH5WZ-116/302	116		88.2	168	347	302	256		
	YH5WZ-116/302	116		88.2	168	347	302	256		
10KA电站 Substation (Z)	YH5WZ-51/134	51	35	40.8	73	154	134	114	400	100
	YH5WZ-52.7/134	52.7		42.2	73	154	134	114		
	YH5WZ-72/184	72	66	57	105	211	184	165	600	100
	YH5WZ-75/223	75		60	127	256	223	190		
	YH5WZ-75/230	75		60	127	256	230	196		
	YH5WZ-75/250	75		60	127	288	250	213		
	YH5WZ-84/215	84		67.2	122	245	215	181		
	YH5WZ-90/235	90		72.5	130	264	235	201		
	YH5WZ-96/250	96	110	75	140	280	250	212	600	100
	YH5WZ-100/260	100		78	145	291	260	221		
	YH5WZ-102/266	102		79.6	148	297	266	226		
	YH5WZ-108/281	108		84	157	315	281	239		
	YH5WZ-116/302	116		88	168	338	302	257		
	YH5WZ-120/300	120		96	174	335	300	270		
	YH5WZ-126/328	126		95.8	183	367	328	279		
	YH5WZ-150/400	150		115	230	444	400	352		

使用场所 Service condition	型号 Type	避雷器 额定电压 MOA Rated voltage kV	系统标称电压 System nominal voltage kV	持续运行电压 Continuous operation voltage kV	直流1mA参考电压 DC Min U1mA reference voltage kV ≥	残压峰值 Residual voltage(kV) ≥			方波冲击电流 耐受2000μs Square wave current impulse withstand A	大电流 耐受4/10μs High current impulse A
						1/4 μs 陡坡冲击电流 Steep current impulse	8/20 μs 雷电冲击电流 Lightning current impulse	30/60 μs 操作冲击电流 Switching current impulse		
10KA电站 Substation (Z)	YH10WZ-192/500	192	220	150	280	560	500	426	600,800,1000	100
	YH10WZ-200/520	200		156	290	582	520	442		
	YH10WZ-204/532	204		159	296	594	532	452		
	YH10WZ-216/562	216		168.5	314	630	562	478		
20KA电站 Substation (Z)	YH20WZ-200/566	220	220	152	304	634	566	464	1200	100
变压器 中性点 Neutral point of transformer	YH1.5W-55/132	55	110	43	79	/	132	126	400	65
	YH1.5W-60/144	60		48	85	/	144	135		
	YH1.5W-72/186	72		58	103	/	186	174		
	YH1.5W-73/200	73		58	105	/	200	174		
	YH1.5W-96/260	96	500	77	137	/	260	243	600	100
	YH1.5W-144/320	144	220	116	205	/	320	299		
	YH1.5W-207/440	207	330	166	292	/	440	410		
电容 Capacitor(R)	YH5WR-3.8/13.5	3.8	3	2.0	7.2	/	13.5	10.5	400	65
	YH5WR-5/13.5	5		3.8	7.2	/	13.5	10.5		
	YH5WR-10/27	10	6	8.0	14.4	/	27	20.8		
	YH5WR-17/45	17	10	13.6	24	/	45	38.3		
	YH5WR-51/134	51	35	40.8	73	/	134	105		
	YH5WR-84/221	84	66	67.2	121	/	221	176		
	YH5WR-90/235	90		72.5	130	/	235	190		
电动机 Motor (D)	YH2.5WD-4/9.5	4	3.15	3.2	5.7	10.7	9.5	7.6	400	65
	YH2.5WD-8/18.7	8	6.3	6.3	11.2	21.0	18.7	15		
	YH2.5WD-12.7/31	12.7	9.8	9.8	18.6	34.7	31	25		
	YH2.5WD-13.5/31	13.5	10.5	10.5	18.6	34.7	31	25.0		
电机中性点 Neutral point of motor(D)	YH1.5WD-2.4/6	2.4	3.2	1.9	3.4	/	6	5	200 300 400	65,100
	YH1.5WD-4.8/12	4.8	6.3	3.8	6.8	/	12	10		
	YH1.5WD-8/19	8	10.5	6.4	11.4	/	19	15.9		
	YH1.5WD-12/26	12	15.75	9.6	17	/	26	21.6		
发电机 Generator (D)	YH1.5WD-13.7/29.2	13.7	18	11	19.5	/	29.2	24.3	400	65
	YH5WD-4/9.5	4	3.15	3.2	5.7	10.7	9.5	7.6		
	YH5WD-8/18.7	8	6.3	6.3	11.2	21.0	18.7	15.0		
	YH5WD-13.5/31	13.5	10.5	10.5	18.6	34.7	31	25.0		
	YH5WD-17.4/40	17.5	13.8	13.8	24.4	44.8	40	32.0		
	YH5WD-20/45	20	15.8	15.8	28.0	50.4	45	35.0		
	YH5WD-23/51	23	18	18	31.9	57.2	51	40.8		
电气化铁道 Railway Traction	YH5WD-25/56.2	25	20	20	35.4	62.9	56.2	45.0	200 400 600	65 65 100
	YH5WT-17/45	17	10	13.6	24.0	51.8	45	38.3		
	YH5WT-42/105	42	27.5	34	60	118	105	89		
	YH5WT-42/120	42		34	65	138	120	98		
	YH5WT-42/120	42		34	65	138	120	98		
	YH5WT-84/240	84	55	68	130	276	240	196		
	YH5WT-100/260	100	110	73	145	291	260	221		
	YH5WT-200/520	200	220	146	290	582	520	442		

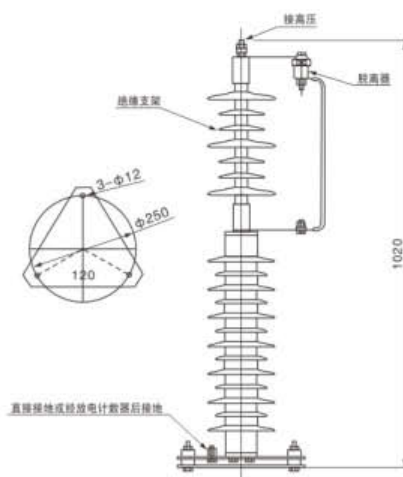
备注: "YH"型号为复合外套氧化锌避雷器。如果是瓷套避雷器, 删去掉型号的"H"
 Note: "YH" is the polymeric housing metal oxide Lighting arrester, if it is porcelain housing, then without "H"

35KV线路悬挂(带脱离器)型 35KV Line Suspension Type (With Disconnecter)



避雷器 型号 MOA type	避雷器 额定电压 Arrester rated voltage kV(rms)	系统 标称电压 Nominal voltage KV	持续运 行电压 MCOV KV	直流(U1mA) 参考电压 Direct voltage ≥kV	最大残压kV(峰值) Max residual voltage		操作冲击 电流下 Operate current impulse	200μs方波 电流(峰值) Rectangular current A	4/10μs 冲击 电流(峰值) Impulse current KA	0.75直流参考电压 下最大泄漏电流 Max. Leakage current μA
					陡波冲击 电流下 Steep current impulse	雷电冲击 电流下 Lighting current impulse				
YH5WX1-51/134L	51	35	40.8	73	154	134	114	400	100	50
YH5WX1-54/142L	54	35	43.2	77	163	142	121	400	100	50
YH5WX1-57/170L	57	35	45.6	80	195	170	145	400	100	50

35KV线路立式(带脱离器)型 35KV Line Vertical Type (With Disconnecter)



避雷器 型号 MOA type	避雷器 额定电压 Arrester rated voltage kV(rms)	系统 标称电压 Nominal voltage KV	持续运 行电压 MCOV KV	直流(U1mA) 参考电压 Direct voltage ≥kV	最大残压kV(峰值) Max residual voltage		操作冲击 电流下 Operate current impulse	200μs方波 电流(峰值) Rectangular current A	4/10μs 冲击 电流(峰值) Impulse current KA	0.75直流参考电压 下最大泄漏电流 Max. Leakage current μA
					陡波冲击 电流下 Steep current impulse	雷电冲击 电流下 Lighting current impulse				
YH5WX2-51/134L	51	35	40.8	73	154	134	114	400	100	50
YH5WX2-54/142L	54	35	43.2	77	163	142	121	400	100	50
YH5WX2-57/170L	57	35	45.6	80	195	170	145	400	100	50

线路型金属氧化物避雷器 Transmission Line Moa



图28
35kV 纯空气
间隙线路型避雷器



图29
35kV 带脱离器
间隙线路型避雷器



图30
35kV 绝缘子支撑
间隙线路型避雷器



图31
110kV 纯空气
间隙线路型避雷器



图32
35kV 带脱离器
间隙线路型避雷器



图33
110kV 绝缘子支撑
间隙线路型避雷器

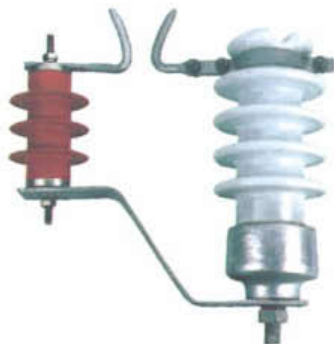


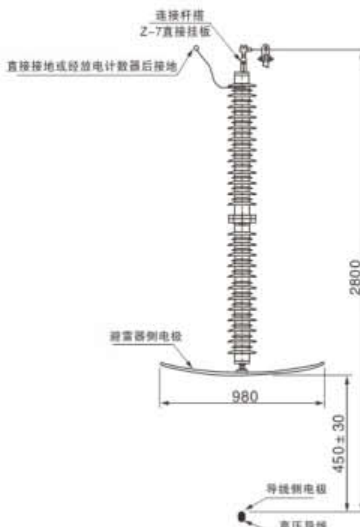
图34
10kV 空气
间隙线路型避雷器



图35
220kV 纯空气
间隙线路型避雷器



图36
220kV 绝缘子支撑
间隙线路型避雷器



线路型金属氧化物避雷器 Transmission Line Moa

用途 Application

线路型金属氧化物避雷器是用于交流输电线路防雷的重要保护电器。交流输电线路在多雷地区，容易遭受雷击，在雷击塔顶时，塔臂电位升高，造成反击使绝缘闪络，如果绝缘子损坏，导线对地短路，则必然导致开关跳闸停电。在线路上加装线路型金属氧化物避雷器以后，则可以避免绝缘子闪络，减少跳闸停电。其办法是在绝缘子串旁并联线路型金属氧化物避雷器，当塔臂电位抬高，避雷器残压比绝缘子串的闪络电压低，可以保证绝缘子不再闪络，避免了线路跳闸停电。

对于线路瓷绝缘子或玻璃绝缘子一般用串联间隙线路避雷器来保护。在采用合成绝缘子的线路，由于合成绝缘子比瓷绝缘子串的雷电全波冲击耐受电压约低20%，则须采用线路型无间隙金属氧化物避雷器。

为了配合输电线路防雷的需求，公司开发了10kV-220kV线路型带串联间隙复合外套金属氧化物避雷器和10kV-110kV线路型无间隙复合外套金属氧化物避雷器，品种规格齐全，便于用户根据不同线路结构，杆塔形状选用。其技术参数见表6。

The transmission line MOA are the major protective apparatus used for preventing transmission line from being struck by lightning. Some of the transmission lines for a.c. system are situated in the excessive-thunder area, where easy to be struck by lightning. When lightning strikes the top of tower, the tower arm's potential will arise. If the line insulation is exceeded, flashover occurs i.e. back flashover. When insulators damaged, the line short circuit to ground is happened. Then switch jumps off and power cut off.

While equipped with transmission line MOA, it can avoid the flashover of insulators and reduce service interruption. As Fig. The transmission line MOA is in parallel connection with the insulator string. While the tower arm's potential arises, the arresters lightning V-S characteristic of operation will be lower than the porcelain insulator string, to ensure the insulators without flashover and avoid the line to be interrupted.

In applying the line with suspension polymer insulators, it shall adopt transmission line MOA without gaps because the full lightning impulse withstanding voltage of polymer insulators is approximately 20% lower than the porcelain ones.

In order to meet the requirements of transmission line against lightning, our company develops polymer housed transmission line MOA with series gap for 10kV-220kV and polymer housed transmission line MOA without gaps for 10kV-110kV. We can offer products with all specifications is very convenience for users to choose. See table 6.

带串联间隙线路型金属氧化物避雷器 Transmission Line Moa With Series Gap

110kV、220kV串联间隙金属氧化物避雷器的串联间隙有绝缘子支撑和纯空气间隙两种结构，它们均在国家电网公司国网武汉高压研究院分别与110kV、220kV绝缘子串进行了雷电伏-秒特性配合试验，其配合曲线如图20、21、22、23。

图中曲线表明，在同一击穿时间内，串联间隙避雷器的放电电压均比同电压等级的绝缘子串的放电电压低17%。

MOA with insulator support single air type of gap for 110kV and 220kV are tested about lightning V-S characteristic with corresponding insulator string in China National high voltage electrical apparatus, quality supervision and testing center. The coordination curve are shown in fig 20、21、22、23.

The curve show the sparkover of gaps are 17% lower than the insulator string under the same grade voltage at the spark over time.

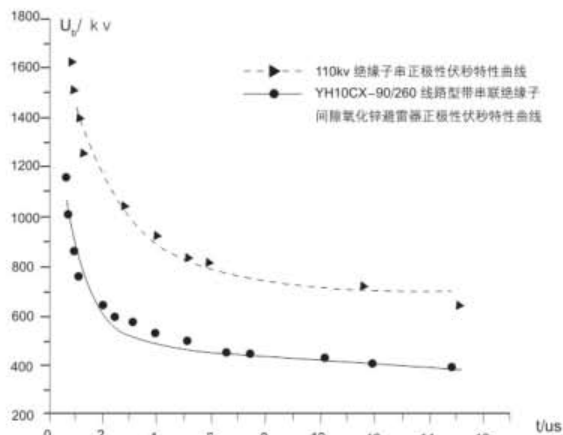


图 20 110kV 绝缘子串与绝缘子支撑间隙线路避雷器的伏秒特性配合曲线

Fig20 V-S characteristic coordination curve of the insulator string with insulator support gap the arrester for 110kV

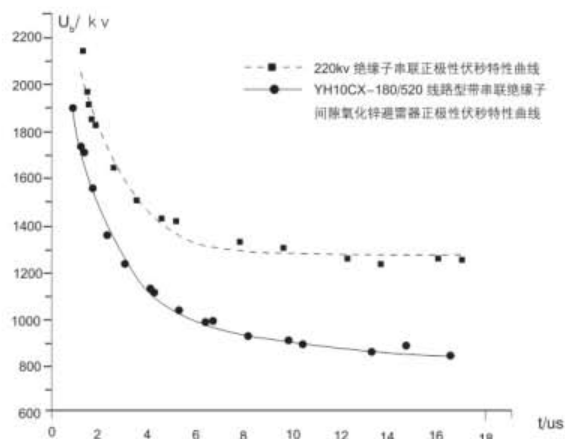


图 21 220kV 绝缘子串与绝缘子支撑间隙线路避雷器的伏秒特性配合曲线

Fig21 V-S characteristic coordination curve of the insulator string with insulator support gap the arrester for 220kV

线路型金属氧化物避雷器 Transmission Line Moa

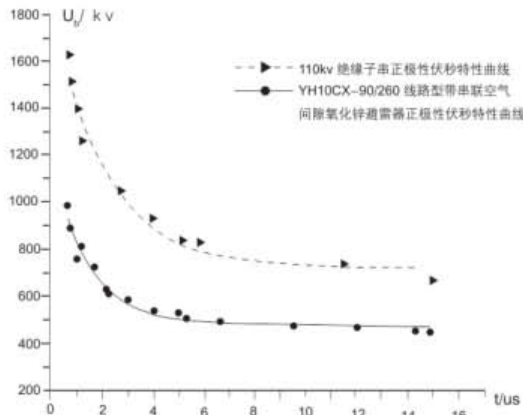


图 22 110kV 绝缘子串与纯空气间隙线路避雷器的伏秒特性配合曲线
 Fig22 V-S characteristic coordination curve of the insulator string with single air gap the arrester for 110kV

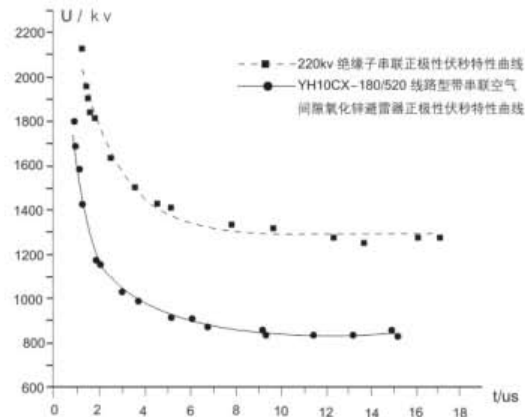


图 23 220kV 绝缘子串与纯空气间隙线路避雷器的伏秒特性配合曲线
 Fig23 V-S characteristic coordination curve of the insulator string with single air gap the arrester for 220kV

无间隙线路型金属氧化物避雷器 Transmission Line Moa Without Gaps

10-110kV线路型无间隙避雷器与电站型无间隙避雷器相比具有两个不同特点：

1. 线路型避雷器保护的對象是线路绝缘子，因此避雷器的残压可以提高，有利于减少通过避雷器的操作过电压电流。
2. 线路型避雷器安装在线路杆塔上，平时无法监测其性能，必须带脱离装置，实现免维护。

10-110kV线路型无间隙金属氧化避雷器带有独特的脱离装置。避雷器通过脱离器与导线相连。脱离装置由核心元件热爆式脱离器等部件组成。在正常情况下，避雷器通过雷电流和操作过电压电流，脱离器均不动作。在异常情况下，避雷器故障损坏时，脱离器装置能可靠动作，使避雷器自动与导线脱离，保证不间断供电，并保持导线与避雷器之间有足够的绝缘距离。

Compared with station MOA without gaps,the transmission line MOA without gaps for 10-110kV has following characteristics. Transmission line MOA is used for protecting the line insulator.So its residual voltage can be heightened,and it is availalbe fof reducing the switching overvoltage current passing through arresters.

Transmission line MOA is installed on the line tower,which is hard to be inspected during operation,so in order to avild always maintenance,it must be equipped with the disconnector device.

transmission line MOA without gaps for 10-110kVshall equipped with special disconnecting device.MOA is connected with the lead by disconnector.The disconnecting device is cimprised of part-disconnector and so on.While the lightning current and switching overvoltage current passed the MOA,the disconnector will not work.While the MOA is damaged,thedisconnector woule be reliable operation. And is brokenaway automatically,to ensure the continous power supply,and keep enough insulation distance between line and MOA.

脱离器 The Disconnector

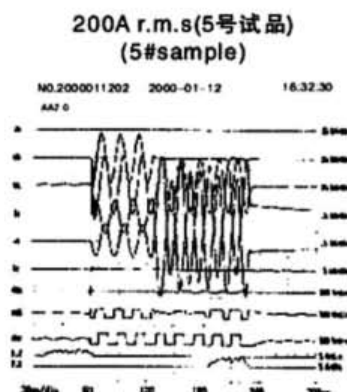
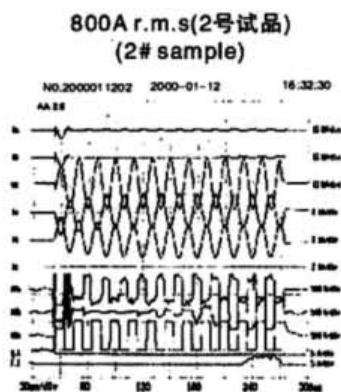
热爆式脱离器通过了动作负载试验(4/10μs100kA后施加二级线路放电)和2ms 400A方波试验，证明在避雷器正常工作时，脱离器不动作。脱离器通过的典型动作安一秒特性如表8。

2ms 400A current test and the operating duty test of disconnector are made in accordance with GB11032(4/10μs 100kA current impulse and line discharge class 2).The disconnector is not operating.Time versus current operation characteristic of disconnector is shown in table 8.

表7 脱离器动作安--秒特征 Table 7 Time Versus Current Operation Characteristic Of Disconnecter

工频动作电流 Operation current	A(有效值)	800					200				
	NO	1	2	3	4	5	1	2	3	4	5
脱离时间(ms)(disconnecting time)		16	12	18	12	19	26	50	18	34	40

典型示波图

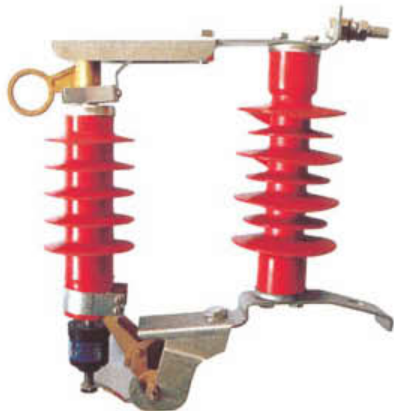


避雷器典型参数表 The Technical Parameters Of Transmission Line Moa

避雷器 Transmission MOA type	系统电压 System voltage kVr.m.s	本体持续 运行电压 Cont.oper. voltage for body kVr.m.s	直流参考 电压不小于 Refer.voltage at 1mA d.c. U1mA d.c. KV	8/0μs雷电 残压不大于 Max.residual voltage at lightning impulse kV crest	2ms方波 通流容量 2ms rectangular current discharge capacity A	4/10μs冲击 通流容量 4/10 μ s impulse discharge capacity kA	结构高度 H Height mm	间隙距离 间隙距离 Gap distance mm	图号 NO.of fig
YH10WX-18/57TL	10	15	28.5	57	150	65	300	/	/
YH10WX-54/142TL	35	43.2	77	142	400	100	700		图29
YH10WX-57/170TL	35	45	85	170	400	100	700	/	图29
YH10WX-96/250TL	66	75	140	250	400	100	1270	/	图32
YH10WX-108/281TL	110	84	157	297	400	100	1270	/	图32
YH10WX-114/297TL	110	89	165	297	400	100	1270	/	图32
YH10WX-120/334TL	110	93	180	334	400	100	1270	/	图32
YH5CX-11/27	10	9	16.5	27	150	65	207	16.5	图34
YH10CX-42/120K	35	33.6	60	120	400	100	850	120±20	图28
YH10CX-42/120	35	33.6	60	120	400	100	940	120±20	图30
YH10CX-69/198K	66	55.2	100	198	400	100	/	390±50	/
YH10CX-69/198	66	55.2	100	198	400	100	/	390±50	/
YH10CX-90/260	110	72	130	260	400	100	1810	460±20	图33
YH10CX-90/260K	110	72	130	260	400	100	1510	450±50	图31
YH10CX-96/280	110	76.8	140	280	400	100	1810	460±50	图33
YH10CX-96/280K	110	76.8	140	280	400	100	1510	450±50	图31
YH10CX-180/520	220	144	260	520	600	100	3100	960±20	图36
YH10CX-180/520K	220.	144	260	520	600	100	2700	850±20	图35
YH10CX-192/560	220	153.6	280	560	600	100	3100	960±20	图36
YH10CX-192/560K	220	153.6	280	560	600	100	2700	850±50	图35

注：C-带间隙 W-无间隙 X-线路型 K-空气间隙 无K-绝缘子间隙 TL-带脱离装置

跌落式避雷器 Drop-out Arresters



YH5WS-17/50DL



YH5WS-17/50DL-TL

概述 General

跌落式（可投式、可卸式）避雷器是将氧化锌避雷器改装后巧妙地安装在跌落式熔断器的跌落式机构上，达到在断电的情况下，可以借助绝缘拉闸操纵杆方便地对避雷器进行检测、维修与更换，不但保证了线路的畅通，而且大大地减少了电力维护人员的工作强度和时

间，特别适合于不宜停电的场所如通信、机场、车站、医院、繁华商业区等。产品其他性能同配电型避雷器。
跌落式避雷器增加了脱离器，避雷器被雷击过电后，如果避雷器外观无损坏时，人工用肉眼是较难发现的，这使徐兆故障点进行修复很费时，另一方面如果被雷击过电故障后，由于仍与电网连接，更换新的避雷器时要么需要带电作业，要么就需要线路拉闸停电，给修复更换工作造成麻烦，也拖延了电网恢复时间。

因此我公司设计生产了跌落式避雷器(YH5WS-17/50DL和YH5WS-17/50DL-TL)，利用工频短路电流让脱离器动作，使脱离器接地端自动脱开，避雷器元件翻落，退出运行，防止事故进一步扩大，并易于维护人员及时发现问题进行维护和更换。从根本上解决了避雷器故障点不易于发现的问题，并在不断电的情况下方便更换，确保了日常供电的稳定性，并减少大量的电力维护工作量，节省了大量的人力，极大的提高了工作效率。其翻落原理类似熔断器熔丝熔断引起熔管翻落。我公司采用了目前国际最先进的热爆式脱离器，具有动作速度快，动作电流范围广，又能耐受规定电流冲击和动作负载的优点。

一.避雷器的安装使用经历了以下三个安装使用过程，其优缺点对比如下：

产品型号说明 Model Description

YH5WS - □ / □ DL - TB

TB表示带热爆式脱离器 TB denotes thermo-explosive model disconnecter

TR表示带热熔式脱离器 TR denotes thermo-fuse model disconnecter

结构形式：DL表示跌落式结构 Structure form: DL denotes falling structure

型号含义与常规避雷器相同 The signification of model is same as that of the routine lightning arrester

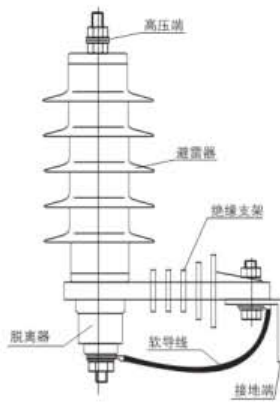
工作原理

跌落式带脱离装置无间隙金属氧化物避雷器(YH5WS-17/50DL-TL)是将带脱离器金属氧化物避雷器的先进理念和跌落式熔断器的原理相结合，除具备金属氧化物避雷器的过电压保护功能外，又可在发生异常故障时，工频短路电流使脱离器动作，其接地端自动脱开，避雷器翻落退出电网运行，检修维护可方便的更换，提高了电网的供电质量。

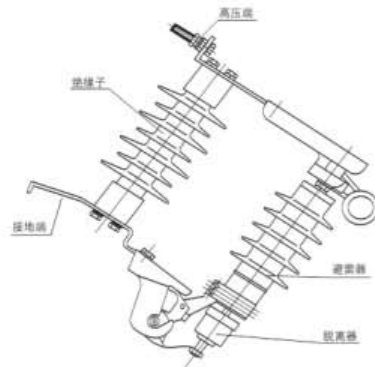
跌落式避雷器 Drop-out Arresters



安装方式一



安装方式二



安装方式三

避雷器安装方式一(第一代避雷器安装方式)：

优点：安装方便

缺点：避雷器出现故障不易发现，检修更换需要断电作业，线路维护工作量大，工作效率低。

避雷器安装方式二(第二代避雷器安装方式)：

优点：安装方便，故障点易于发现

缺点：虽然故障点易于发现，由于避雷器在低压端退出电网运行，因此检修更换还需要断电作业，线路维护还是不方便。

避雷器安装方式三(第三代避雷器安装方式)：

优点：安装方便，故障点易于发现，由于避雷器在高压端退出电网运行，因此检修更换可带电作业，节省了大量的人力，极大的提高了工作效率。目前YH5WS17/50DL是比较实用的安装方式。

产品电气参数表 Electrical Parameter Table of Product

避雷器型号 Type	系统额定电压 Rating voltage of system kv(r.m.s)	避雷器额定电压 Rating voltage of lightning arrester kv(r.m.s)	持续运行电压 Continuous operating voltage kv(r.m.s)	直流参考电压 (U1mA) DC reference voltage (U1mA) <kV	0.75U1mA下泄露电流 Leakage current under 0.75U1mA >μA	雷电冲击电流下残压 Residual voltage under the impact of thunder >kV	操作冲击电流下残压 Residual voltage under operating impact current >kV	方波通流容量(2ms) Square wave throughflow capacity(2ms) <A	大电流冲击耐受 High current impact withstand <kA	使用场所 Application Location
YH5WS-10/30DL	6	10	8.0	15.0	30	25.6	30.0	150	40	配电 Power distribution
YH5WS-10/30KL-TB										
YH5WS-17/50DL	10	17	13.6	25.0	30	42.5	50.0	150	40	
YH5WS-17/50DL-TB										

注：避雷器的参数同常规避雷器，以上为配电型，可换成电容型 等其它类型。

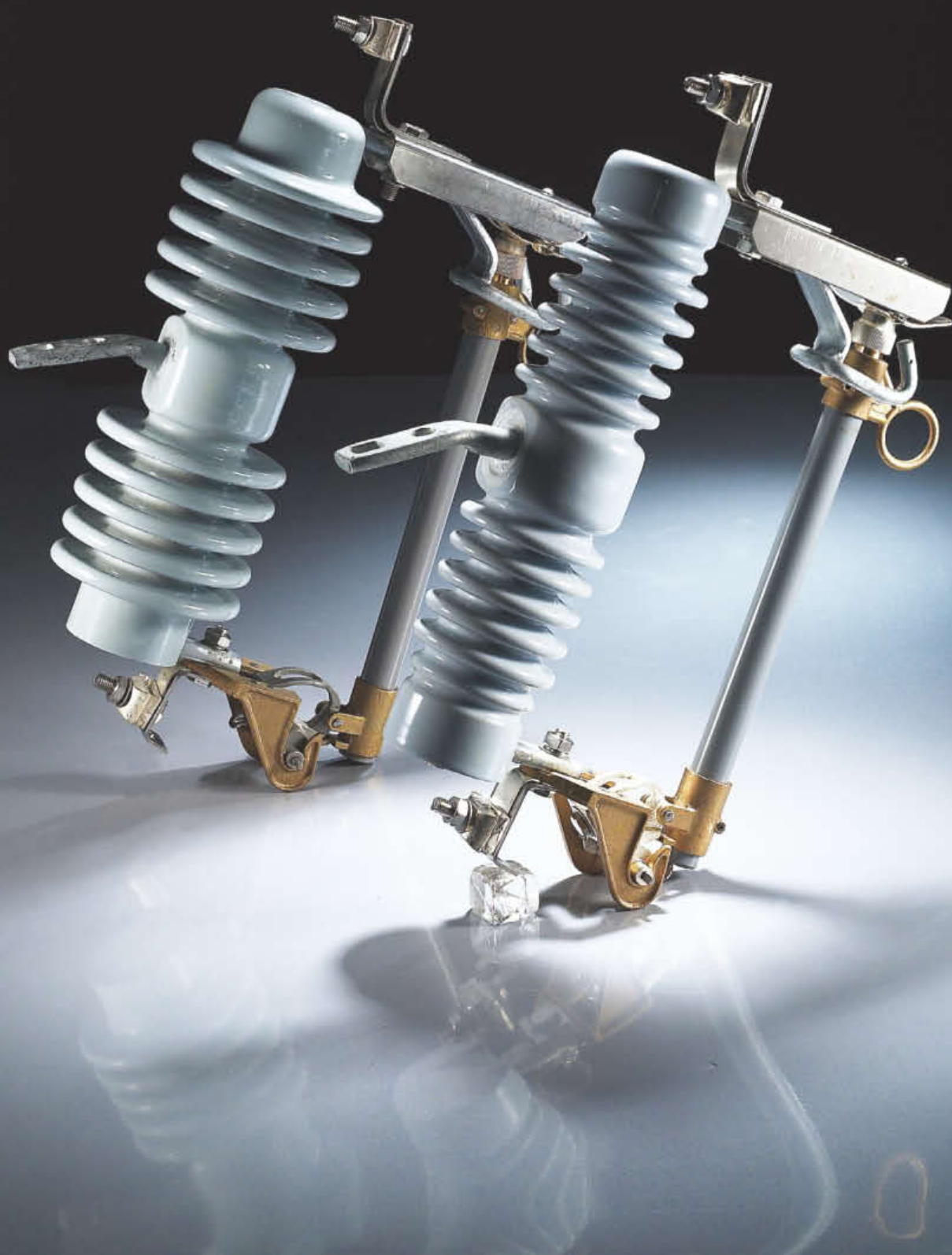
安装使用说明 Operating Instruction Of Installtion

1. 安装使用前请检查避雷器元件与跌落式机构之间的松紧程度，以保证接触良好并投卸灵活。
2. 跌落式机构上接线端接高压线，下接线端必须可靠接地，切勿接反。
3. 避雷器在投入运行前和投入运行后的注意事项同普通避雷器。
4. 当避雷器需要检修或更换时，可在不断电的情况下，借助绝缘拉闸操纵杆对准避雷器单元上的拉钩进行方便的操作，如同更换跌落式熔断管。

1. Prior to installation and usage, please check the degree of tightness between lightning arrester components and falling type mechanism to guarantee the good touch and flexible throw and dismounting.
2. The upper terminal post of falling mechanism is connected with high voltage wire, the lower terminal post must be reliable grounding never be reverse connection.
3. The notices prior to putting into use and after putting into use are same as those of the power distribution lightning arrester.
4. In overhaul and change of lightning arrester, in cause of no power failure ,aim at the hook on lightning arrester unit by means of insulation switch-off control rod to make convenient operation, which is same as failing fuse tube.

FUSED CUT OUT

▶ 跌落式熔断器



跌落式熔断器 Drop-out Fuse Cutout

概述 General

跌落式熔断器及拉负荷跌落式熔断器是户外高压保护电器。它装置在配电变压器高压侧或配电线支干线路上、用作变压器和线路的短路、过载保护及分、合负荷电流。跌落式熔断器由绝缘支架和熔丝管两部分组成，静触头安装在绝缘支架两端，动触头安装在熔丝管两端，熔丝管由内层的消弧管和外层的酚醛纸管或环氧玻璃管组成。拉负荷跌落式熔断器增强弹性辅助触头及灭弧罩，用以分、合负荷电流。

跌落式熔断器在正常运行时，熔丝管借助熔丝张紧后形成闭合位置。当系统发生故障时，故障电流使熔丝迅速熔断，并形成电弧，消弧管受电弧灼热，分解出大量的气体，使管内形成很高压力，并沿管道形成纵吹，电弧被迅速拉长而熄灭。熔丝熔断后，下部动触头失去张力而下翻，锁紧机械，释放熔丝管，熔丝管跌落，形成明显的开断位置。当需要拉负荷时，用绝缘杆拉开动触头，此时主动、辅助触头仍然接触，继续用绝缘杆拉动触头，辅助触头也分离，在辅助触头之间产生电弧，电弧在灭弧罩狭缝中被拉长，同时灭弧罩产生气体，在电流过零时，将电弧熄灭。

Drop-out fuse cutout and load switching fuse cutout are of outdoor used high voltage protective device, To be connected with incoming feeder of distribution transformer or distribution lines, it mainly protect transformer or lines from short circuit and overload, and on/off loading current, Drop-out fuse cutout is composed of insulate insulator supports and fuse tube, static contacts is fixed on two sides of insulator support and moving contact is installed on two ends of fuse tube, Fuse tube is composed of inside arc-extinguishing tube. Outer phenolic compound paper tube or epoxy glass tube, Load switching fuse cutout provides enforced elastic auxiliary contacts and arc-extinguishing enclosure for switching on-off loading current.

At normally working via fuse link tightened the fuse tube is fixed to form up of close position. In case system occur faults, fault current result in fuse melt immediately and take place electric arc, which let arc-extinguishing tube being heated and explode a lot of gas, This will produce high pressure and blow off the arc along with tube. After fuse link melt moving contact has no tightened strength again, mechanism is locked and fuse tube drop out, Cutout now is in open position, When it needs to switch off during cutout loading, operator shall via insulating operating sticks pull the moving contact, at its beginning main contact and auxiliary static contact is contacted still, Whiling pulling the auxiliary contact is separated between auxiliary contacts there occur electric arc and the arc will be lengthened in arc-extinguishing enclosure gap and meanwhile arc-extinguishing explode gas to blow off the arc during current passing zero.

用途及执行标准 Application And Operative Standard

本产品使用于10~35kV配电线路分支线和配电变压器一侧，用于过载和短路保护，分合额定负荷电流。

本产品型号按JB/T8321-1996《交流高压熔断器型号编制方法》的规定进行编制，产品参数 按GB15166.3-1994《交流高压熔断器喷射式熔断器》标准执行。对该标准中未明确定义的重要参数及配置方式，按JB/DQ2139-1986《10~35kV户外交流高压跌落式熔断器暂行技术条件》的要求修正执行。

This product is applicable for branch line of distribution line of 10~35kV and primary side of distribution transformer, used to protect the equipment against overload or short-circuit, and break and make the rated load current.

Model of this product is prepared according to JB/T8321-1996 The framing method for the type of alternating current high-voltage fuse, the product parameters are in accordance with GB15166.3-1994 Alternating-current high-voltage fuses-Expulsion fuse. Revise and carry out according to JB/DQ2139-1986 Temporary technical conditions for outdoor high-voltage alternating-current drop-out fuse of 10~35kV for the important parameters and configuration modes that have not been well defined in the above standards.

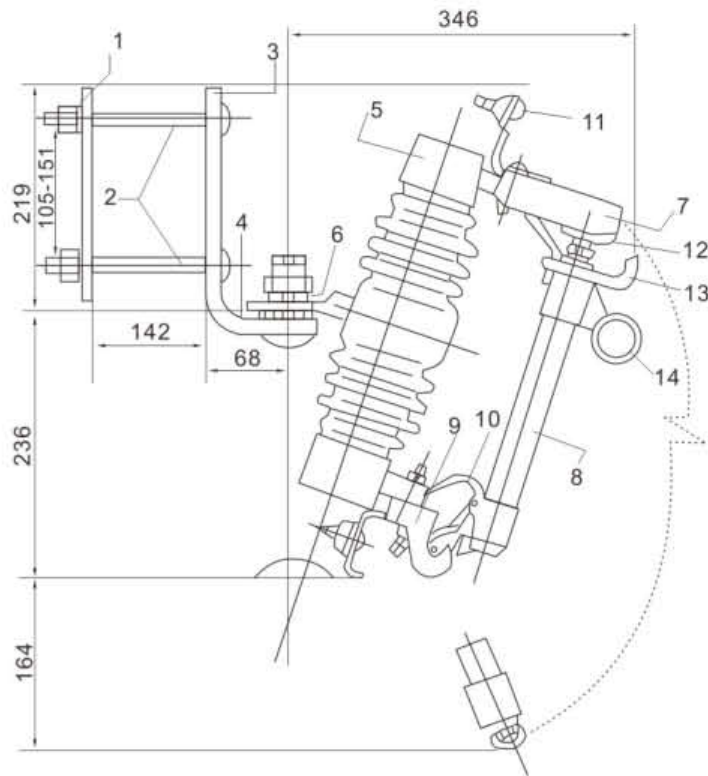
使用条件 Service Conditions

Ambient temperature: -40℃~+40℃;	环境温度：不高于+40℃，不低于-40℃；
Altitude: not exceed 1000m；	海拔高度：不超过1000m(1000m以上可按GB311.1-1997进行修正)
Power frequency: 50±2Hz;	电源频率：50±2Hz；
Earthquake intensity: ≤Ms7;	地震烈度：7度及以下；
Max wind speed: 35m/s;	最大风速：35m/s

产品型号说明 Mode Description



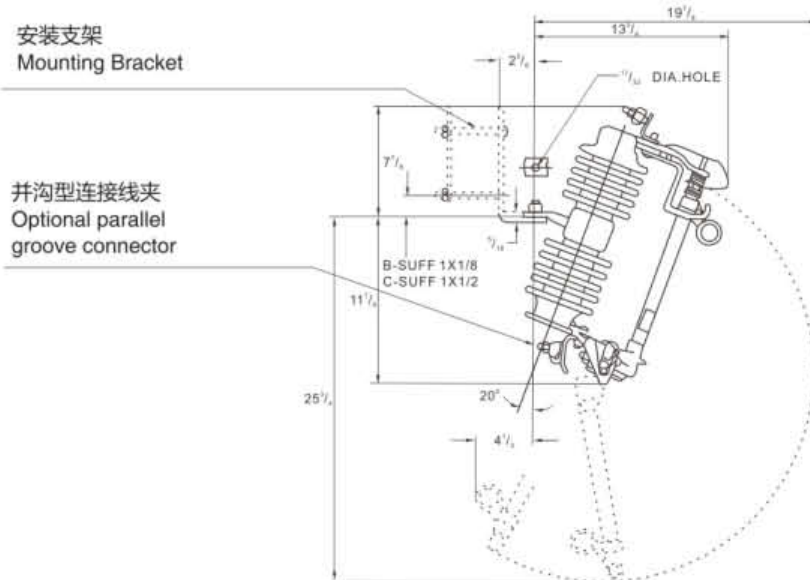
熔断器示意图 Drawing of drop-out fuse cutout



熔断器部件名称

编号 No.	部件名称 Description
1	螺母 Nut
2	螺杆 Long Bolts
3	安装支架 I Mounting Bracket I
4	安装支架 II Mounting Bracket II
5	瓷件 Porcelain Insulator
6	弹簧垫圈 Spring Washer
7	上盖槽 One-piece channel
8	熔管 Fuse tube
9	下支座 Lower Socket
10	下触头 Lower contacts
11	接线座 Connector
12	上触头 Upper Contacts
13	导向钩 Attachment hooks
14	操作环 Operation Ring

跌落式熔断器附件示意图 ACCESSORIES OF DROP-OUT FUSE



备注:

1. 连接线夹详见表一所述。
2. 安装支架共有四种，尺寸如下图所标明。

Note:

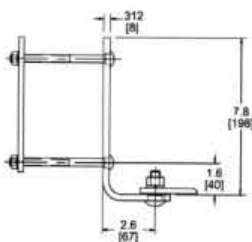
1. Add connector detail information as table 1.
2. Mounting Bracket have four types, the dimension shown is following drawing.

表一 Table 1

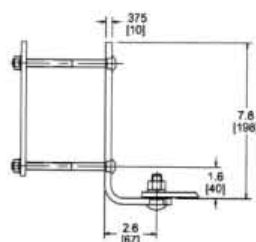
连接导线 Terminal Connectors		
连接器类型 connector Type	适用导线 wire size	型号后标号 Catalog no.suffix
并沟型线夹 Parallel-Groove Clamp, tin-plated bronze	#6 --- 4/0 ACSR or 250 MCM	-D
带孔螺栓 (小) Small Eyebolts	#8 -- 2/0 stranded	-J
带孔螺栓 (大) Large Eyebolts	# 6---4/0 ACSR or 250 MCM	-M

表二 Table 2

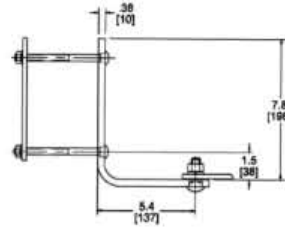
安装支架 Mounting Brackets	
安装支架类型 Mounting Brackets Type	型号后标号 Catalog no.suffix
NEMA 标准安装支架A型 NEMA A Bracket	-A
NEMA 标准安装支架B型 NEMA Heavy Duty "B" Bracket with carriage bolts M12*50 for adjust bracket to fit crossarms.	-B
加长型安装支架 Extended Crossarm Bracket (Horizontal section is 70mm longer than NEMA "B" bracket)	-E
柱上安装支架 Pole Mounting Bracket	-P



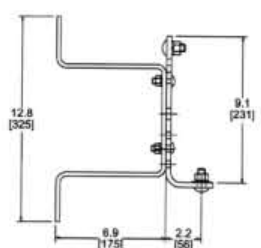
NEMA A bracket
安装支架A型



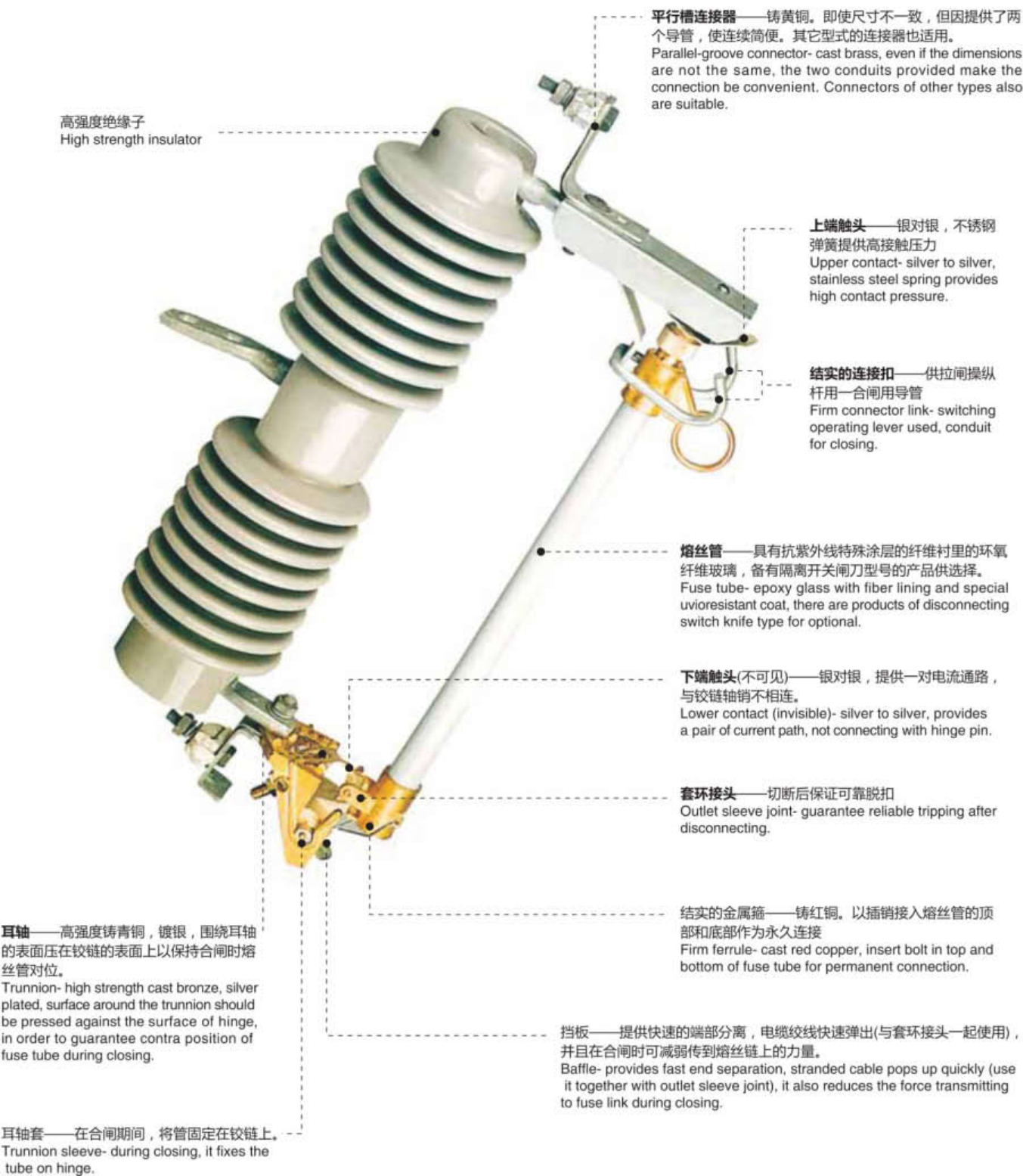
NEMA B bracket
安装支架B型



Extended bracket
加长型安装支架



Pole Mounting bracket
柱上安装支架



高强度绝缘子
High strength insulator

平行槽连接器——铸黄铜。即使尺寸不一致，但因提供了两个导管，使连续简便。其它型式的连接器也适用。
Parallel-groove connector- cast brass, even if the dimensions are not the same, the two conduits provided make the connection be convenient. Connectors of other types also are suitable.

上端触头——银对银，不锈钢弹簧提供高接触压力
Upper contact- silver to silver, stainless steel spring provides high contact pressure.

结实的连接扣——供拉闸操纵杆用——合闸用导管
Firm connector link- switching operating lever used, conduit for closing.

熔丝管——具有抗紫外线特殊涂层的纤维衬里的环氧纤维玻璃，备有隔离开关闸刀型号的产品供选择。
Fuse tube- epoxy glass with fiber lining and special uvioresistant coat, there are products of disconnecting switch knife type for optional.

下端触头(不可见)——银对银，提供一对电流通路，与铰链轴销不相连。
Lower contact (invisible)- silver to silver, provides a pair of current path, not connecting with hinge pin.

套环接头——切断后保证可靠脱扣
Outlet sleeve joint- guarantee reliable tripping after disconnecting.

结实的金属箍——铸红铜。以插销接入熔丝管的顶部和底部作为永久连接
Firm ferrule- cast red copper, insert bolt in top and bottom of fuse tube for permanent connection.

挡板——提供快速的端部分离，电缆绞线快速弹出(与套环接头一起使用)，并且在合闸时可减弱传到熔丝链上的力量。
Baffle- provides fast end separation, stranded cable pops up quickly (use it together with outlet sleeve joint), it also reduces the force transmitting to fuse link during closing.

耳轴——高强度铸青铜，镀银，围绕耳轴的表面压在铰链的表面上以保持合闸时熔丝管对位。
Trunnion- high strength cast bronze, silver plated, surface around the trunnion should be pressed against the surface of hinge, in order to guarantee contra position of fuse tube during closing.

耳轴套——在合闸期间，将管固定在铰链上。
Trunnion sleeve- during closing, it fixes the tube on hinge.

跌落式熔断器 Drop-out Fuse Cutout



10-15KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
RW3-12	10	100	6300	100	42	260	7.5	53x32x12
RW3-12	10	200	8000	110	42	260	7.5	



12-15KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
RW4-12	12	100	6300	110	42	320	7	49x27x11.5
RW4-12	12	200	12500	110	42	320	7.5	



10-15KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
RW7-12	10	100	6300	100	42	230	6.2	48x27x12
RW7-12	10	200	8000	110	42	230	6.2	



10-15KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
RW11-12	12	100	6300	110	42	230	7.8	48x12x31
RW11-12	12	200	8000	110	42	230	7.8	

跌落式熔断器 Drop-out Fuse Cutout



10-15KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
RW10-12F	12	100	6300	110	42	360	8.5	56x13x40
RW10-12F	12	200	8000	110	42	360	8.5	



10-15KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
PRWG1-12	12	100	6300	110	42	380	8.8	64x13x42
PRWG1-12	12	200	8000	110	42	380	8.8	



12-15KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
RW8-12X	12	100	6300	110	45	280	4.1	51x23x14
RW8-12X	12	200	12000	110	45	280	4.5	



12-15KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
HRW3-12	12	100	6300	125	45	380	3.8	41x22x12
HRW3-12	12	200	12000	125	45	380	4.0	

跌落式熔断器 Drop-out Fuse Cutout



10-15KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
HRW7-12	12	100	6300	125	45	380	4.5	49x25x12
HRW7-12	12	200	12500	125	45	380	4.7	



10-15KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
HRW11-12	12	100	6300	100	42	350	3.8	42x35x11
HRW11-12	12	200	8000	110	42	350	3.8	



10-15KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
HRW10-10F	12	100	6300	110	42	350	3.8	42x35x11
HRW10-10F	12	200	8000	110	42	350	3.8	



35KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
PRWG2-35	35	100	6300	170	70	870	16	90x40x13
PRWG2-35	35	200	8000	170	70	870	16	

跌落式熔断器 Drop-out Fuse Cutout



35KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
HPRWG2-35	35	100	6300	170	70	870	16	90x40x13
HPRWG2-35	35	200	8000	170	70	870	16	



35KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
RW5-35	35	100	6300	170	105	820	24.5	66x33.5x17
RW5-35	35	200	8000	170	105	820	24.5	



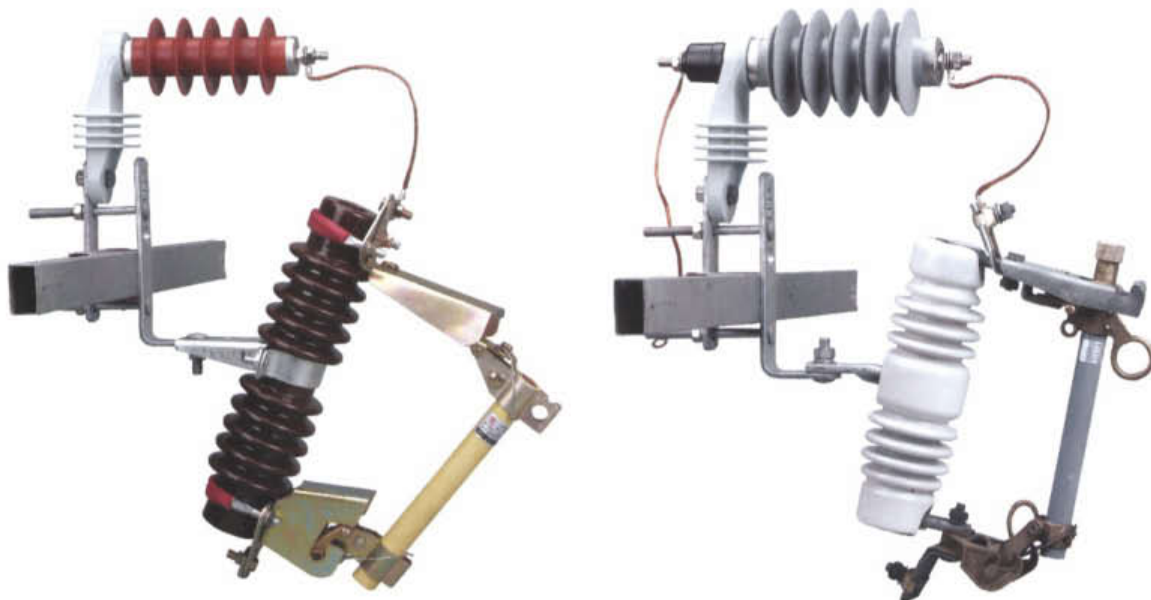
35KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
HRW5-35	35	100	6300	170	105	820	24.5	66x33x17
HRW5-35	35	200	8000	170	105	820	24.5	

避雷器/熔断器组合 Surge Arrester/type L Fuse Cutout Combination

氧化锌避雷器和跌落式熔断器可以通过B型NEMA安装支架组合在一起，这样可以更广泛的应用在电力线路中。目前L型熔断器组合有15KV和27KV两种电压等级，但可以根据客户的需求配备常规爬电距离或者加大的爬电距离。跌落式熔断器目前有100A和200A两种熔芯配备。

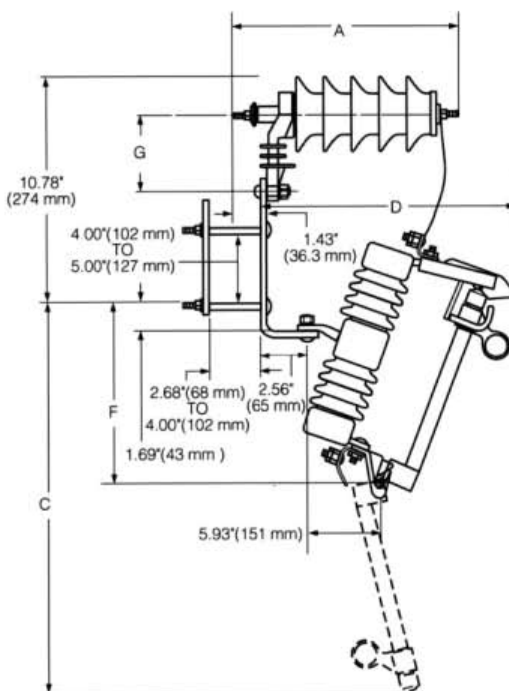
Surge arrester/Type L interchangeable fuse cutout combinations are available in a wide variety of arrester designs and fuse cutout ratings. Type L fuse cutouts are available in either of two voltage ratings : 15 kV and 27 kV, and in standard creepage or extra creepage units to meet the user's application needs. Cutouts are available with a 100 A or 200 A fuse holder.



安装示意图

下面的示意图为氧化锌绝缘
避雷器和跌落式熔断器的组合。

Shows an outline drawing of an
housed surge arrester/Type L
fuse cutout combination.



跌落式熔断器 Drop-out Fuse Cutout



12-15KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC1-12/100	12-15	100	8000	110	40	250	5.5	41x36x9.5
YNC1-12/200	12-15	200	10000	110	40	250	6	



12-15KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC2-12/100	12-15	100	8000	110	40	250	5.5	41x36x9.5
YNC2-12/200	12-15	200	10000	110	40	250	6	



12-15KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC3-12/100	12-15	100	8000	110	40	250	6.5	40.5x30x10.5
YNC3-12/200	12-15	200	10000	110	40	250	7	



12-15KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC4-12/100	12-15	100	8000	110	40	250	6.8	40.5x30.5x11
YNC4-12/200	12-15	200	10000	110	40	250	7	

跌落式熔断器 Drop-out Fuse Cutout

15-24KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC1-15/100	15-24	100	8000	125	45	350	6.8	50x36x10.5
YNC1-15/200	15-24	200	10000	125	45	350	7.2	

15-24KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC2-15/100	15-24	100	8000	125	45	350	7.1	50x37x11.5
YNC2-15/200	15-24	200	10000	125	45	350	7.6	

15-24KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC3-15/100	15-24	100	8000	125	45	350	7.6	50x38x11.5
YNC3-15/200	15-24	200	10000	125	45	350	8.0	

15-24KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC4-15/100	15-24	100	8000	125	45	350	7.2	50x37x11.5
YNC4-15/200	15-24	200	10000	125	45	350	7.6	

跌落式熔断器 Drop-out Fuse Cutout



24-27KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withsand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC1-24/100	24-27	100	8000	150	65	540	9.0	50x38.5x14
YNC1-24/200	24-27	200	10000	150	65	540	9.4	



24-27KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withsand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC2-24/100	24-27	100	8000	150	65	540	9.2	49x35.5x14.5
YNC2-24/200	24-27	200	10000	150	65	540	9.6	



24-27KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withsand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC3-24/100	24-27	100	8000	150	65	540	9.5	50x38.5x15.5
YNC3-24/200	24-27	200	10000	150	65	540	10	



24-27KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withsand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC4-24/100	24-27	100	8000	150	65	540	9.3	50x32.5x15
YNC4-24/200	24-27	200	10000	150	65	540	9.7	

跌落式熔断器 Drop-out Fuse Cutout



30-33KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withsand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC1-30/100	30-33	100	8000	170	70	700	10.5	59x36x13.5
YNC1-30/200	30-33	200	10000	170	70	700	11.0	



30-33KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withsand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC2-30/100	30-33	100	8000	170	70	700	11.0	58x35x13.5
YNC2-30/200	30-33	200	10000	170	70	700	11.5	



30-33KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withsand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC3-30/100	30-33	100	8000	170	70	700	13.0	66x37.5x14
YNC3-30/200	30-33	200	10000	170	70	700	13.5	



33-36KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withsand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC1-33/100	33-36	100	8000	170	70	720	12.5	66x37.5x14
YNC1-33/200	33-36	200	10000	170	70	720	13.0	

跌落式熔断器 Drop-out Fuse Cutout



33-36KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC2-33/100	33-36	100	8000	170	70	720	12.0	65x35x13.5
YNC2-33/200	33-36	200	10000	170	70	720	12.5	



33-36KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC4-33/100	33-36	100	8000	170	70	720	13.0	66x37.5x14
YNC4-33/200	33-36	200	10000	170	70	720	13.2	



12-15KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC5-12/100	12-15	100	8000	110	40	250	7.3	45x34x11
YNC5-12/200	12-15	200	10000	110	40	250	7.5	



15-24KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC5-15/100	15-24	100	8000	125	45	350	8.1	55x36x11.5
YNC5-15/200	15-24	200	10000	125	45	350	8.6	

跌落式熔断器 Drop-out Fuse Cutout



24-27KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC5-24/100	24-27	100	8000	150	65	540	11.0	55x38x15.5
YNC5-24/200	24-27	200	10000	150	65	540	11.20	



33-36KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNC5-33/100	33-36	100	8000	170	70	720	13.2	66x38x15.3
YNC5-33/200	33-36	200	10000	170	70	720	13.7	



12-15KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
HYNC1W-12/100	12-15	100	8000	110	40	380	3.7	41.5x37.5x10.5
HYNC1W-12/200	12-15	200	10000	110	40	380	4.0	



15-24KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withstand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
HYNC1-15/100	15-24	100	8000	125	45	450	3.7	45x37.5x10
HYNC1-15/200	15-24	200	10000	125	45	450	4.0	

跌落式熔断器 Drop-out Fuse Cutout



24-27KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withsand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
HYNC1W-24/100	24-27	100	8000	150	65	540	4.0	50.5x38x10
HYNC1W-24/200	24-27	200	10000	150	65	540	4.5	



24-27KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withsand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
HYNC1W-27/100	24-27	100	8000	150	65	540	4.2	51.5x38x11.5
HYNC1W-27/200	24-27	200	10000	150	65	540	4.7	



27-30KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withsand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
HYNC1-27/100	27-30	100	8000	150	65	600	4.0	53.5x37.5x10
HYNC1-27/200	27-30	200	10000	150	65	600	4.5	



30-33KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withsand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
HYNC1-30/100	30-33	100	8000	170	70	670	4.3	55.5x37.5x12.5
HYNC1-30/200	30-33	200	10000	170	70	670	4.5	

跌落式熔断器 Drop-out Fuse Cutout



33-36KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withsand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
HYNC1W-33/100	33-36	100	8000	170	70	740	4.4	61.5x38x11.5
HYNC1W-33/200	33-36	200	10000	170	70	740	4.8	



33-36KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withsand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
HYNC1-36/100	33-36	100	8000	180	75	880	4.8	67.5x38x12.5
HYNC1-36/200	33-36	200	10000	180	75	880	5.0	



33-36KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withsand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
YNCG1-35	33-36	100	8000	170	70	820	27.5	68x17x15
YNCG1-35	33-36	200	10000	170	70	820	27.5	

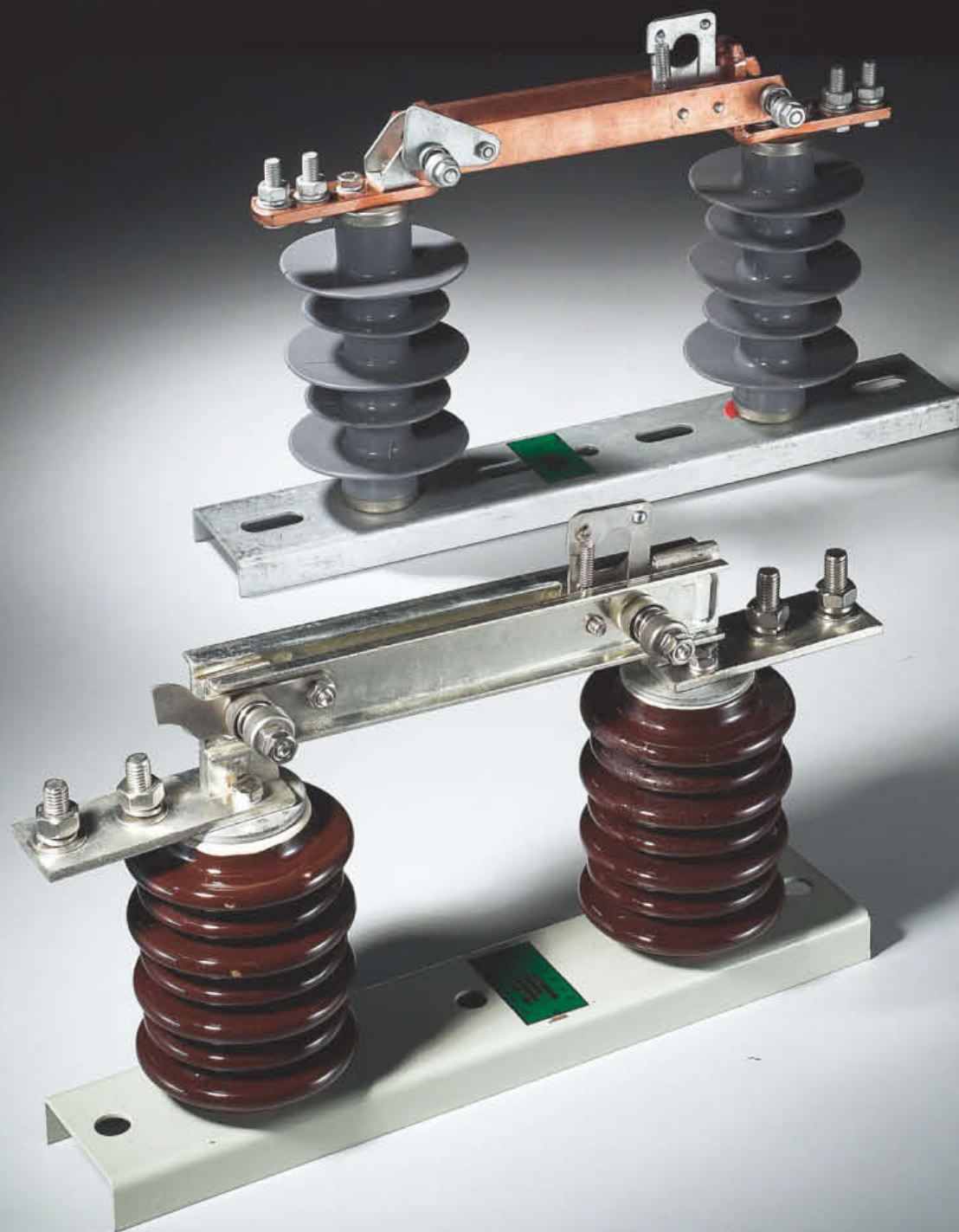


27-33KV

型号 Type	额定电压 Rated voltage (kV)	额定电流 Rated current (A)	开断电流 Breaking current (A)	冲击电压 Impulse voltage (kV)	工频耐压 Power-frequency withsand voltage (kV)	爬距 Creepage distance (mm)	重量 Weight (kg)	外形尺寸 Dimension (cm)
HYNC1-27	27	100	8000	200	81	1130	7.5	70x65x17
HYNC1-27	27	200	10000	200	81	1130	7.5	

DISCONNECTING SWITCH

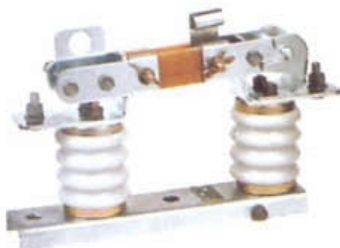
▶ 隔离开关



JDW系列户外低压隔离开关 JDW Sires Outdoor Low Voltage Isolator Switch



JDW1-0.5



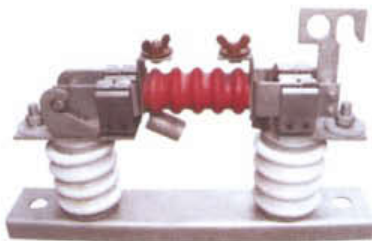
JDW2-0.5



JDW3-0.5



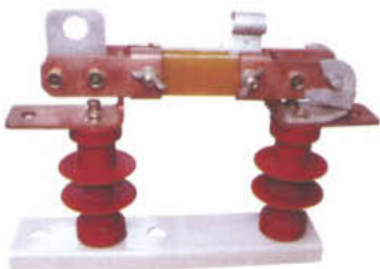
JDW4-0.5



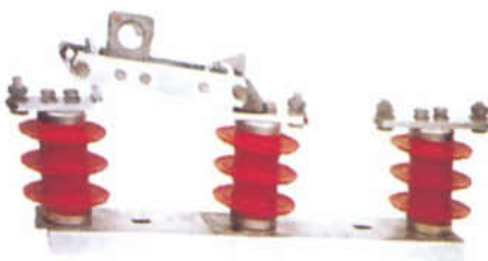
JDW5-0.5



GWR1-0.5



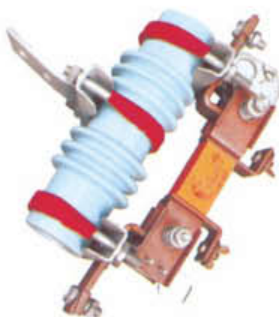
HJDW2-0.5



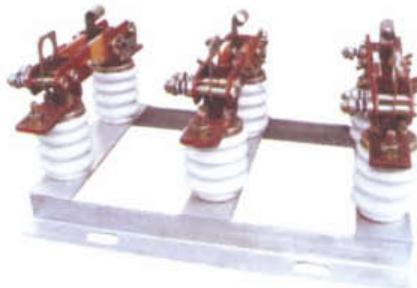
HJDW3-0.5



HJDW5-0.5



HRW-0.5



JDW2-0.5LT

用途 Application

JDW系列户外低压隔离开关是用于额定电压为0.5kV电力系统中，作为变压器低压侧的短路保护与过负荷保护,在一定的条件下可以切合空载变压器,空载线路及额定工作电流,作为有电压无负载的情况下接通或隔离电源之用.本隔离开关用绝缘钩棒进行操作。产品主要由触刀、触头、支柱瓷瓶/橡胶、底座等件组成,每3只为一组,产品体积小、重量轻,便于高空安装,触刀和触头接触采用弹簧锁紧方式,接触良好可靠,在一般振动下不会自行分闸.如维修或更换熔片,只要用钩棒拉开分闸部分将触刀摘下,在地面更换熔片再用钩棒将触刀挂上合闸即可。

The JDW sires outdoor low voltage disconnect switch is the low voltage switch equipment of single phase AC50HZ. The products is used for power transformer outgoing, sub-feeder in the network, it is the newest product of fuse-cutout. It can open and close in over-head circuit and power transformer under the special condition, the disconnect switch can low down the power-off area, ensure the security of maintenance man, improve the reliability of power supply.

使用条件 Normal Service Conditions

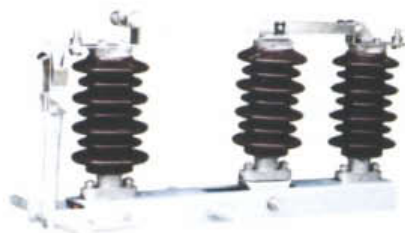
- 海拔高度不超过1000m。
- 周围空气温度：上限一般地区+40℃，下限一般地区-30℃，高寒地区-40℃。
- 风压不超过700pa。(相当于风速34ms)
- 地震烈度不超过8度。
- 无频繁剧烈震动场所。
- 普通型安装场所应无严重影响隔离开关绝缘和导电能力的气体、蒸气。化学性沉积、盐雾、灰尘及其它爆炸性、侵蚀性物质。
- 防污型适用于重污秽地区，但不应有引起火灾及爆炸物质。
- The altitude does not exceed 1000m.
- The ambient air temperature: Maximum +40°C; Minimum: -30°C,Paramos-40°C.
- The wind pressure does not exceed 700Pa. (corresponding to 34m/s wind speed).
- The earthquake intensity does not exceed 8 degrees.
- The working situation hasn't frequent violent vibration.
- The installation site of ordinary type isolator should be kept away from gas, smoke chemical deposition, salt-spray fog, dust and other explosive and corrosive maters that affect seriously insulation and conduction capability of the isolator.
- Pollution-proof type isolator is applying to severe filthy conduction area; however, it shouldn't be any explosive matters and matters causing fire.

技术参数 Technical Specification

型号 Type	额定电压 Rated voltage kV(rms)	额定电流 Rated current A	4S热稳定电流 4S Heat steady e.c.	动稳定电流 Shock voltage A	冲击电流(KV) impulse withstand voltage		工频耐压(KV) Power-frequency withstand voltage	
					相对地 To earth	断口间(KV) Across the isolating distance	相对地 To earth	断口间(KV) Across the isolating distance
JDW1-0.5	0.5	200A 400A 600A 800A 1000A 1250A	1250	3150	4	5	2	3
JDW2-0.5	0.5		1250	3150	4	5	2	3
JDW3-0.5	0.5		1250	3150	4	5	2	3
JDW4-0.5	0.5		1250	3150	4	5	2	3
JDW5-0.5	0.5		1250	3150	4	5	2	3
HJDW1-0.5	0.5		1250	3150	4	5	2	3
HJDW2-0.5	0.5		1250	3150	4	5	2	3
HJDW3-0.5	0.5		1250	3150	4	5	2	3
HJDW4-0.5	0.5		1250	3150	4	5	2	3
HJDW5-0.5	0.5		1250	3150	4	5	2	3
GWR1-0.5	0.5		1250	3150	4	5	2	3
HRW-0.5	0.5		1250	3150	4	5	2	3
JDW2-0.5LT	0.5		1250	3150	4	5	2	3

注：如需要将瓷瓶支柱绝缘子换成硅橡胶支柱绝缘子，请在型号前加上H。如JDW1-0.5表示产品使用的是瓷瓶支柱，HJDW1-0.5则表示产品使用的是硅橡胶支柱。
Note: If you need silicon rubber insulator instead porcelain post insulator, please add H before type, for example, HJDW1-0.5 instead JDW1-0.5.

GW1型系列户外高压隔离开关 GW1-12G(D)SIRES OUTDOOR HIGH VOLTAGE ISOLATOR SWITCH



GW1-12G



GW1-12G新型



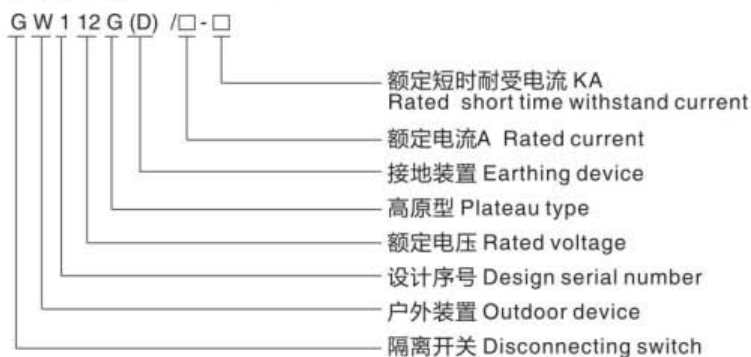
HGW1-12G新型

用途 Application

GW1型系列户外高压隔离开关，为单极结构的高压开关设备，在户外12KV线路网络中有电压无负载情况下分、合电路之用，带接地的刀开关，配用CS□型手动机构，可防止带电接地线和带接地线“合闸”等误操作，操作人员也不必再另挂地线。其中防污型户外高压隔离开关可满足严重污秽地区用户的要求，可以有效地解决隔离开关在运行中出现的污闪问题。

GW1 series outdoor high voltage isolator switch are high voltage switchgears of monopole structure and be applied for the connection and disconnection of circuit under voltage without loading. Knife switch with earthing with CS mould manual operating mechanism can prevent disoperation such as switching in etc. on line earthing wires and earthing wires. And the operating staff needs not to make additional suspension of earthing wires. The pollution resistance type outdoor high voltage isolator can meet the demands of clients for heavily polluted areas and can make effective solutions on the pollution flashover during the operation of disconnecting switches.

型号及含义 Model and Implication



使用条件 Normal Service Conditions

- a. 海拔高度不超过1000m.
- b. 周围空气温度: 上限一般地区 +40°C, 下限一般地区-30°C, 高寒地区-40°C.
- c. 风压不超过700Pa. (相当于风速34ms)
- d. 地震烈度不超过8度.
- e. 无频繁剧烈震动场所.
- e. 普通型安装场所应无严重影响隔离开关绝缘和导电能力的气体、蒸气。化学性沉积、盐雾、灰尘及其它爆炸性、侵蚀性物质。
- g. 防污型适用于重污秽地区，但不应有引起火灾及爆炸物质。

1. The altitude does not exceed 1000m.
2. The ambient air temperature: Maximum +40°C;
Minimum: -30°C, Paramos -40°C.
3. The wind pressure does not exceed 700Pa. (Corresponding to 34m/s wind speed).
4. The earthquake intensity does not exceed 8 degrees.
5. The working situation has not frequent violent vibration.
6. The installation site of ordinary type isolator should be kept away from gas, smoke chemical deposition, salt-spray fog, dust and other explosive and corrosive matters that affect seriously insulation and conduction capability of the isolator.
7. Pollution-proof type isolator is applying to severe filthy conduction area; however, it shouldn't be any explosive matters and matters causing fire.

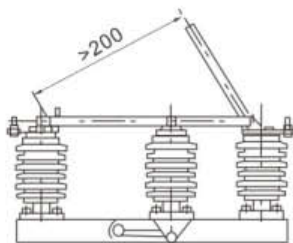
主要技术数据 Main Technical Data

项目Item	单位Unit	参数Parameter	备注Remark
额定电压 Rated voltage	KV	12/17.5/24	
额定电流 Rated current	A	630 /1250	
额定峰值耐受电流 Rated peak withstand current	KA	50 100	接地闸刀与闸刀相同 The earthing switch is the same with the main switch
额定短时耐受电流 Rated short time withstand current	KA/4S	20 40	

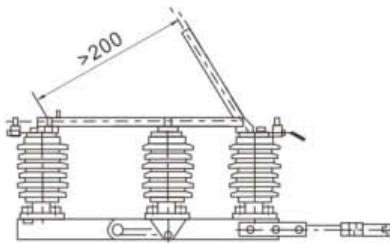
型号及规格 Models and Specifications

结构形式 Type of Structure	型号 Models	电流等级 Current grade	
		630A	1250A
不接地Without earthing		GW1-12G/630	GW1-12G/1250
动触头接地Earthing with moving contact		GW1-12G(D1)/630	GW1-12G(D1)/1250
静触头接地Earthing with fixed contact		GW1-12G(D2)/630	GW1-12G(D2)/1250

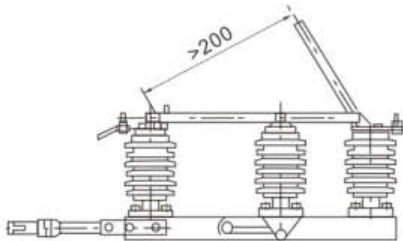
外形及安装尺寸 Appearance And Installation Dimensions



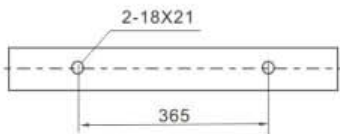
图一 GW1-12G



图二 GW1-12G(D1)



图三 GW1-12G(D2)



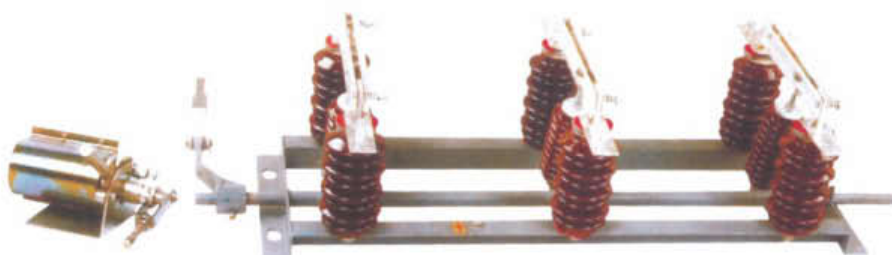
图四 安装孔尺寸

订货须知 Order Notice

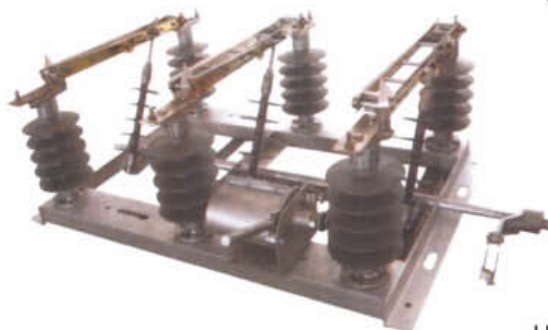
订购本开关时须注明产品全型号、额定电压、额定电流、热稳定电流，是否带接地装置以及设备安装方式等。特殊要求请与本厂联系。
When you order this products, please indicate the models, rated voltage and rated current rate thermal stability current of products, whether earthing device is needed and the installation method if the device etc. if you have any other requirement please contact with us.

GW1-12G(D)LT(组合式)户外高压隔离开关

GW1-12G(D)LT Outdoor High Voltage Isolator Switch(combined Type)



GW1-12G(D)LT



HGW1-12G(D)LT

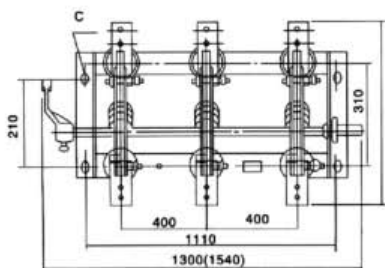
GW1主要技术参数 GW1 Main Technical Parameters

项目 Items			单位 Unit	参数 Technical parameters			
额定电压 Rated voltage			KV	10	15	20	
最高工作电压 Max. operating voltage			KV	12	17.5	23	
额定绝缘水平 Rated Insulation level	1min 工频耐受电压（有效值） 1min.Power frequency withstand voltage	对地 To earth	KV	38	40	50	
		断口 Across open DS	KV	42	47	60	
	额定雷电冲击耐受电压（峰值） Rated lightning impulse withstand voltage	对地 To earth	KV	75	105	125	
		断口 Across open DS	KV	85	120	145	
额定频率 Rated frequency			Hz	50			
额定电流 Rated current			A	200	400	630	1250
4秒热稳定电流（有效值） 4s short time withstand current			KA	6.3	12.5	20	31.5
动稳定电流（峰值） Peak withstand current			KA	16	31.5	50	80
配用机构 Mechanism supplied for disconnector				CS8-1、CS8-D、CD8-5防雨型手动机构 或CX6电动操动机构 CS8-1、CS8-D、CD8-5Rain type manual mechanism or Cx6 motor drive mechanism			

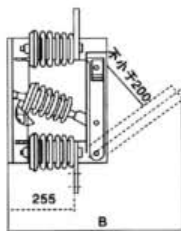
HGW1主要技术参数 HGW1 Main Technical Parameters

项目 Items			单位 Unit	参数 Technical parameters			
额定电压 Rated voltage			kV	10	24	33	
最高工作电压 Max. operating voltage			kV	12	27	35	
额定绝缘水平 Rated Insulation level	1min 工频耐受电压（有效值） 1min.Power frequency withstand voltage	对地 To earth	kV	40	50	80	
		断口 Across open DS	kV	47	60	80	
	额定雷电冲击耐受电压（峰值） Rated lightning impulse withstand voltage	对地 To earth	kV	105	125	180	
		断口 Across open DS	kV	120	145	210	
额定频率 Rated frequency			Hz	50			
额定电流 Rated current			A	200	400	630	1250
4秒热稳定电流（有效值） 4s short time withstand current			kA	6.3	12.5	20	31.5
动稳定电流（峰值） Peak withstand current			kA	16	31.5	50	80
配用机构 Mechanism supplied for disconnector				CS8-1、CS8-D、CD8-5防雨型手动机构 或CX8-5电动操动机构 CS8-1、CS8-D、CD8-5Rain type manual mechanism or CX8-5 motor drive mechanism			

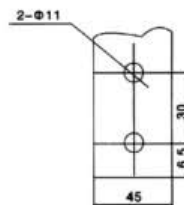
安装及外形尺寸图 Overall And Installation Dimension



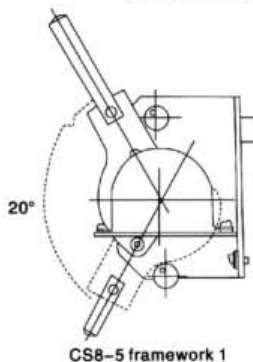
GW1-10G Series



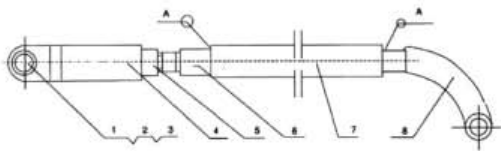
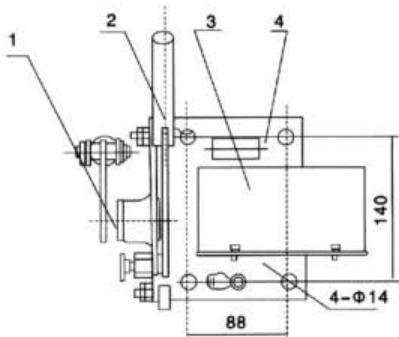
GW1-12G/400A



GW1-12G/630A
Terminal Block Loop



CS8-5 framework 1



连接极

1. $\phi 12$ 轴销
2. 垫圈M12
3. 开口销
4. 直接头
5. M16螺母
6. 接头
7. 3/4" 水煤气管
8. 弯接头

Connect pole

1. $\phi 12$ spindle
2. washer M12
3. open bolts
4. bending coupling
5. M16 nut
6. pole
7. 3/4" water gas pipe
8. connect pole head

型号 Product model number	A	B	C
GW1-12G/400A	510	555	18 x 24 $\geq$ 4
GW1-12G/630A	530	555	
GW1-24G/400A	510	555	18 x 24 $\geq$ 4
GW1-24G/630A	530	555	

GW9-12户外高压隔离开关 GW9-12 Outdoor High Voltage Isolator Switch



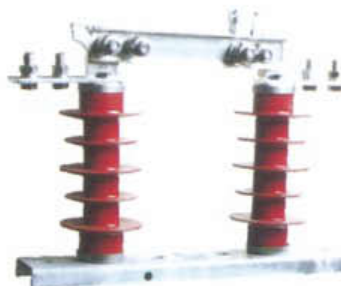
GW9-12



HGW9-12



GW9-12W新型



HGW9-12W新型

用途 Application

GW9-12户外高压隔离开关是单相交流50Hz高压开关设备，用于额定电压为10KV的电力系统中，作为有电压无负载的情况下接通或隔离电源之用。本隔离开关用绝缘钩棒进行操作。

The "GW9-12G" outdoor high voltage isolator switch is the high voltage switch equipment of single phase AC 50Hz. The product is suitable for power system with rated voltage 10KV to make or break power supply under circumstances of with voltage and no load. The isolator is adopts isolated hook rod to operate.

型号及含义 Mould And Definition

H G W 9 - □ □ / □

额定电流(A) Rated current(A)

字母 "G" 表示高海拔 "D" 表示带接地闸刀

"W" 表示耐污性 "C" 表示穿墙式。

"G" : Plateau type "D" : Earthing device

"W" : Pollution Resistance type "C" : Wall feed-through type

额定电压 KV Rated voltage(KV)

设计序号 Design serial number

"N" 表示户内 "W" 表示户外

"N" : Indoor contrivance "W" : outdoor contrivance

"G" 表示隔离开关 "G" : Disconnecting switch

"H" 表示复合绝缘子 "H" : composite insulator type

使用条件 Normal Service Conditions

- 海拔高度不超过1000m。
 - 周围空气温度：上限一般地区+40℃，下限一般地区-30℃，高寒地区-40℃。
 - 风压不超过700pa。(相当于风速34ms)
 - 地震烈度不超过8度。
 - 无频繁剧烈震动场所。
 - 普通型安装场所应无严重影响隔离开关绝缘和导电能力的气体、蒸气。化学性沉积、盐雾、灰尘及其它爆炸性、侵蚀性物质。
 - 防污型适用于重污秽地区，但不应有引起火灾及爆炸物质。
- The altitude does not exceed 1000m.
 - The ambient air temperature: Maximum+40°C; Minimum: -30°C, Paramos-40°C.
 - The wind pressure does not exceed 700Pa. (corresponding to 34m/s wind speed).
 - The earthquake intensity does not exceed 8 degrees.
 - The working situation hasn't frequent violent vibration.
 - The installation site of ordinary type isolator should be kept away from gas, smoke chemical deposition, salt-spray fog, dust and other explosive and corrosive matters that affect seriously insulation and conduction capability of the isolator.
 - Pollution-proof type isolator is applying to severe filthy conduction area; however, it shouldn't be any explosive matters and matters causing fire.

GW9-12W/HGW9-12W技术参数 Main Technical Parameters

型 号 Type	额定电压 Rated voltage KV	额定电流 Rated current A	极限通过电流 Limit Passing Current (KA)		10秒热稳定电流 10-second Heat stabilization Current KA
			峰值 Peak value	有效值 r.m.s	
(H)GW9-10W	10 12 15	200	5	9	5
(H)GW9-12W	10 12 15	400	21	15	10
(H)GW9-15W	10 12 15	630	35	25	14
(H)GW9-15W	10 12 15	1,000	50	35	20

GW9-12G/HGW9-12G技术参数 Main Technical Parameters

型 号 Type	额定电压 Rated voltage KV	额定电流 Rated current A	4S热稳定电流 4S Heat steady current	动稳定电流 Shock steady current A	冲击耐压 Impulse withstand voltage (KV)		工频耐压(KV) Power-Frequency withstand voltage	
					相对地 To earth	断口间 Across the isolating distance	相对地 To earth	断口间 Across the isolating distance
GW9-12G/400	12-15	400	12500	31500	75	85	38	42
GW9-12G/630	12-15	630	12500	31500	75	85	38	42
HGW9-12G/400	12-15	400	12500	31500	75	85	38	42
HGW9-12G/630	12-15	630	12500	31500	75	85	38	42

外形及安装尺寸 Overall And Installation Dimension

本隔离开关可以垂直或者倾斜安装，外形和安装请见下图

The isolator can be installed vertically or slant, please see figure for overall and installation dimension.

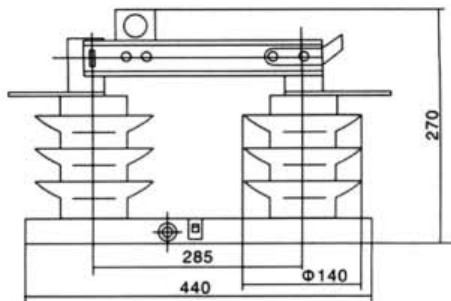


图1 GW9-10(W)/400
630 外形尺寸
(防污型支柱绝缘直径为 Φ160)

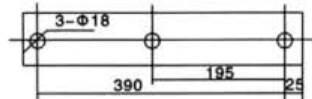


图2 安装尺寸

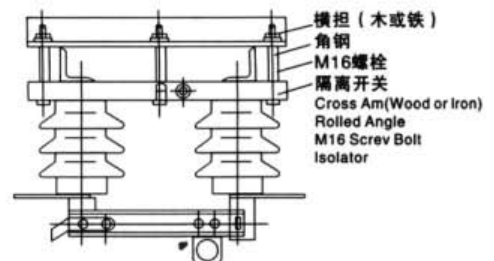
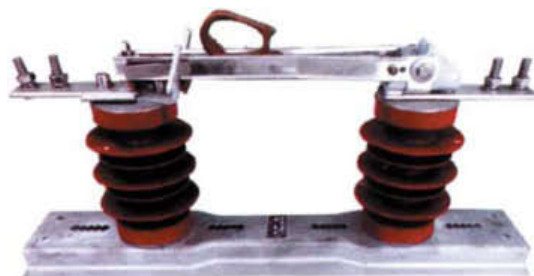
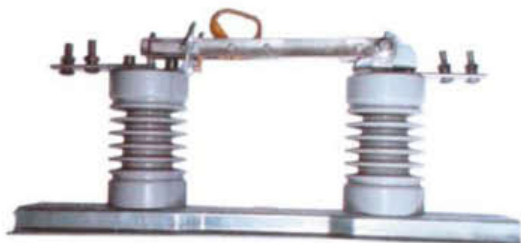


图3 隔离开关的安装

FGW9-12负荷隔离开关 FGW9-12 HV Switch Disconnect

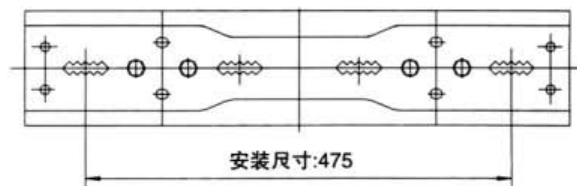
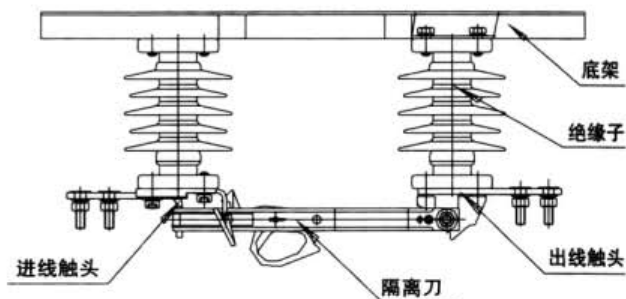


用途 Application

FGW9-12型高压负荷隔离开关用于额定电压为10KV的电力系统中，作为有电压无负载的情况下接通或隔离电源之用。本隔离开关带负荷的情况下一定要用专用手持式负荷开断装置来操作。

The FGW9-12 outdoor high voltage switch disconnect is the high voltage switch equipment. The product is suitable for power system with rated voltage 10KV to make or break power supply under circumstances of with voltage and no load. When our disconnect switch with load, it must use special hand-held devices to start the load operation

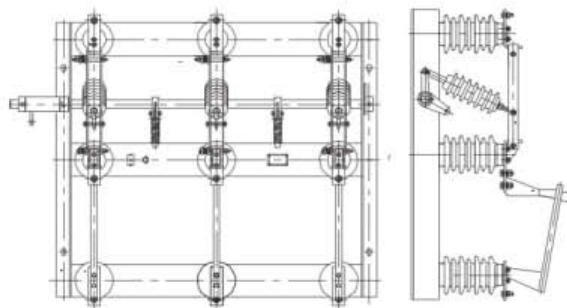
外形及安装尺寸 Overall And Installation Dimension



主要技术参数 Main Technical Parameters

型 号 Type		额定电压 Rated voltage KV	额定电流 Rated current A	4S热稳定电流 4S Heat steady current KA	雷电冲击耐压 Impulse withstand voltage (KV)		1min工频耐压 KV 1min Power-Frequency withstand voltage	
					相对地 To earth	断口间 Across the isolating distance	相对地 To earth	断口间 Across the isolating distance
平原型(安装点海拔 高度不超过2000M)	FGW9-12/400	12	400	12.5	75	85	42	48
	FGW9-12/630	12	630	20	75	85	42	48
	FGW9-12/900	12	900	25	75	85	42	48
	FGW9-12/1250	12	1250	40	75	85	42	48
高原型(安装点海拔 高度2000M-4000M)	FGW9-15/400	12	400	12.5	110	125	47	54
	FGW9-15/630	12	630	20	110	125	47	54
	FGW9-15/900	12	900	25	110	125	47	54
	FGW9-15/1250	12	1250	40	110	125	47	54

GWR型户外高压交流隔离开关(出口型) GWR Outdoor AC HV Disconnect Switch



Outline Dimension

1. Frame 2. Post insulator 3. Porcelain insulator 4. Contact 5. Spring
6. Rotate shaft corner arm 7. Disconnect blade 8. Cutout fuse
Drawing 1GWR-12,40.5/100 Outline dimension

GWR-12/24/40.5-100 outdoor AC high voltage Fused type disconnect switch (disconnect switch for short) is used in electric power system with rated frequency 50/60Hz, rated voltage 12(40.5)kV. Its main for making or breaking circuit under line supplying voltage in outdoor high voltage distribution system equipments.

Thereof anti-pollution type disconnect switch especial used in serious polluted area.

Structure feature

- Disconnect switch is composed of fuse components, frame and operating insulator, fixed contact, contact blade and linkage spring mechanism.
1. Cutout fuse assemble: mainly combine with upper, down movable and fixed contact, arc extinguish bushing, insulator and mount support parts, during normal work, the fuse linking the moving joint of the arc extinguish bushing with movable contactor, the arc extinguish bushing is a closed position under the pressure of the fixed contactor.
 2. Frame: Base is bended from steel sheet, axis with pulling arm cross through frame center. Holes drilled on base are used for fixing post insulator.
 3. Post and operating insulator: anti-erode post insulator.
 4. Fixed contactor: contact blade made of red copper plate, fixed on post insulator and extended level plane end as for connecting wire and upside of curve connected both side reliable with contacting blade.
 5. Contact blade: It's made of two rectangle section red copper plates, both ends of contact blade attached with spiral spring to adjust contacting pressure.
 6. Switch could be operated combined with CS mechanism vertical mounting on outdoor double electric poles.

Technical Specification

NO.	Item	Unit	Data	
1	Rated voltage	KV	12	40.5
2	Rated current	A	100	100
3	Rated frequency	HZ	50/60	50/60
4	Maximum breaking current	KA	5	5
5	Main circuit resistance	$\mu\Omega$	≤ 150	≤ 150
6	1min.PF withstand voltage(dry)	phase to phase/earth across open contacts	KV	42/48
7	1min.PF withstand voltage(wet)		KV	30
8	Lightning impulse withstand voltage		KV	95/110
9	Mechanical life	disconnect switch fuse cutout	times	2000 300

GW4型户外高压隔离开关 GW4 Outdoor High Voltage Disconnecter Switch

用途 Application

GW4型户外交流高压隔离开关是双柱式三相交流50Hz 户外高压开关设备，用于电压10-200KV的电力系统中，供在有电压无负载时分合电路之用，以及对被检修的高压母线、断路器等电器设备与带电的高压线路进行电路隔离之用。其中防污型的隔离开关可满足重污秽地区用户的要求，并可以有效地解决隔离开关在运行中出现的污闪问题。

隔离开关属双柱水平开启式，各单级都由基座、支柱绝缘子、出线座及触头等部分组成，两支柱绝缘瓷瓶相互平行地安装在基座两端的轴承上，且与基座垂直。主导电部分分别安装在两支柱绝缘瓷瓶上方，随支柱绝缘瓷瓶做90°转动。

隔离开关的每个轴承座内装有轴装配，两轴装配间通过连板、调节螺杆等连接传动。

出线座中的紫铜编织带软连接分别紧固在导电杆和接线板上，接线板供用户连接线路之用。

中间触头部分的触指成对装配，采用自力型触指，其形式为转入式，以减少分、合闸时触头与触指间的磨损，提高使用寿命。

隔离开关附有接地开关时，主导电回路与接地开关的连锁用基座上的扇形板与弧形板保证，在主导电回路合闸时，接地开关不可合闸，接地开关合闸时，主导电回路不可合闸。配用CS8-6D时隔离开关与接地开关连锁由机构上的连锁板实现。

35KV成套隔离开关由GW4-40.5(D)(W)型隔离开关本体、CS11或CS8-6D型人力操动机构、传动附件等组成，也可配用CJ6型等电动机。110KV成套隔离开关由GW4A-126(D)(W)型隔离开关本体、CS14G机构、传动附件等组成，也可配用CJ6型等电动机。220KV成套隔离开关由GW4-252(D)(W)型隔离开关本体、CS14G或CS9型人力操动机构、传动附件等组成，也可配用CJ6型电动机。

产品特点

隔离开关采用双柱中开、触头转入式结构、具有自清洁触头的能力，提高了接触可靠性；

触指采用高强度、高导电率、高弹性的新型材料制造。依靠触指自身的弹力夹紧触头，避免了目前因弹簧锈蚀、发热退火而引起的触头夹紧力降低，接触电阻增加，触头发热加剧的恶性循环；

隔离开关转动部分按免维护的要求设计。转动座设计成密封结构，水汽、尘埃、有害气体无法进入，使轴承、二硫化钼锂基润滑脂永远工作在良好的环境中，轴承永不生锈、润滑脂无法流失，永不干涸，使隔离开关长期运行后的操作力矩不会增加。采用不锈钢轴销与无油自润滑轴承相配合结构；钢制件采用热镀锌，确保隔离开关操作灵活、轻便、可靠、永不锈蚀。

GW4 Outdoor High Voltage Disconnecter is a three phase AC switching device for 50 to 60Hz high voltage. It is used for breaking the circuit when there is voltage but without load in the power system with maximum voltage of 145KV.

The structure of the earthed switching part is divided into three types: no earthing. Single or double earthing. It can also be divided into two types according to areas in which it is used: ordinary or anti-dirt type. The electric parameters of the type earthing switch has the same short-circuit withstand ability as the disconnecter switch.

GW4(A)Series High Voltage Disconnecter is developed product with advanced technology at the base of the original disconnecter. It is employed, at off-load condition, to switch high-voltage bus, applied an Isolating distance between the high-voltage bus checked&maintained, or electric equipments such as circuit breaker and live high-voltage bus.

Disconnecter GW4 series products are in design of double-supporting horizontal 3-pole-linkage and can be acted single-pole. It consists of base frame, supporting insulator and upper contactor. The revolving insulators are installed on the base with ball bearing inside, therefore it is quite easy to operated the disconnecter.

The exposed parts and exposed parts are all made of stainless steel or processed with aluminum alloy processing technology or hot-zinc-plating technology to ensure operation with no corrosion for a long period of time, and further ensure the flexibility and reliability of the product, satisfy the requirements in the different areas.

The product is provided with a manual operating mechanism and a electromagnetism lock can also be fitted to prevent from wrong operation.

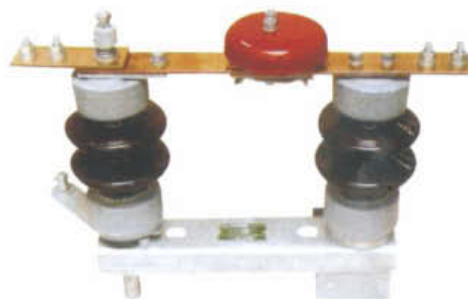
There are main characteristics: Reliable; Notably low maintenance level; One or two earthing switches can be built on; Operating by motor or hand drive; Porcelain or Silicone insulator.

型号及含义 Model and Implication



使用条件 Normal Service Conditions

- a. 海拔高度：1000-3000m;
b. 环境温度不高于+40°C，不低于-30°C
(高寒地区不低于-40°C)；
c. 风压不超过700Pa(相当于风俗34m/s);
d. 地震裂度不大于8度;
e. 覆冰厚度不大于10mm;
f. 安装场所应无易燃、易爆危险品、化学腐蚀及剧烈振动；
g. 支柱绝缘子污秽等级；普通型为0级、防污型为II级。
- a. Altitude: 1,000-3,000mb.
b. Ambient temperature: no more than 40°C and no less than -30°C (no less than -40°C in alpine areas)
c. Wind pressure: $\leq 700\text{Pa}$ (equalling wind velocity of 34m/s)
d. Earthquake intensity: ≤ 8
e. Ice thickness: $\leq 10\text{mm}$
f. The installation location shall be free from flammable, explosive dangerous articles, chemical corrosion and fierce vibration
g. The pollution grade of post insulator: 0 for general type and II for pollution resistance type



技术参数 Technical Parameters

项目 Item			单位 unit	参数Technical Parameters					
额定电压 Rated voltage			KV	10	15		24		
最高工作电压 Max. operation voltage			KV	12	17.5		27		
额定绝缘水平 Rated insulation level	1min工频耐受电压(有效值) 1min power frequency withstand voltage	对地 To earth	kV	38	40		50		
		断口 Across open DS	kV	45	47		60		
	额定雷电冲击耐受电压(峰值) Rated lightning impulse withstand voltage	对地 To earth	kV	75	105		125		
		断口 Across open DS	kV	85	120		145		
额定频率 Rated frequency			HZ	50					
额定电流 Rated current			A	200	400	630	1250	1600	2000
额定短时耐受电流 Short time withstand current 4s(Eff).			KA	6.3	12.5	20	31.5	31.5	40
额定峰值耐受电 Rated peak withstand current			KA	16	31.5	50	80	80	100
额定短路持续时间 Rated duration of short-circuit			S	4					
接线端额定纵向机械负荷 Rated mechanical terminal vertical load			N	245					
配用机构 Mechanism supplied for disconnector				CS11-1、CS11、CS8-6D手动机构 (manual mechanism)或(or)CJ11A-G电动操动机构 (motor drive mechanism)					
与隔离开关组装的接地开关额定参数 Earthing switch rated parameter for discnector assembling				接地开关用于切断残余电流、对动、热稳定电流不做考核 Earthing switch use for cutting off the residual current , the dynamic and thermal current without examination					

GW4(A)-40.5、70.5、126(D)(W)型户外高压六氟化硫断路器



技术参数 Technical Parameters

项目 Item			单位 unit	参数 Technical Parameters					
额定电压 Rated voltage			kV	40.5		72.5		126	
额定绝缘水平 Rated insulation level	1min工频耐受电压(有效值) 1min power frequency withstand voltage	对地 To earth	kV	95		140		230	
		断口Across open DS	kV	118		160		265	
	额定雷电冲击耐受电压(峰值) Rated lightning impulse withstand voltage	对地 To earth	kV	185		325		550	
		断口Across open DS	kV	215		375		630	
额定频率 Rated frequency			Hz	50					
额定电流 Rated current			A	630	1250	1600	2000	3150	4000
额定短时耐受电流 Short time withstand current 4s(Eff).			kA	20	31.5	40	40	50	63
额定峰值耐受电流 Rated peak withstand current			kA	50	80	100	100	125	160
额定短路持续时间 Rated duration of short-circuit			S	4/2					
额定端子机械负荷 Rated mechanical terminal load		水平纵向负荷 Level of vertical load	N	750		1000			
		水平横向负荷 Level of lateral load	N	500		750			
		垂直力 Vertical force	N	750		1000			
爬电距离 Creepage Distance			mm	1013-1256		1813-2248		3150-3906	
机械寿命 Mechanical life			次	2000					
人力操动机构 Manual operating mechanism		不带接地 Without earthing		CS11					
		单接地 Single earthing		CS8-6D					
		双接地 Double earthing		主刀CS14G(F) ; 地刀CS11(F)					
		控制回路电压 Control circuit voltage	V	AC220,DC110,DC220					
电动机操动机构 Moter drive mechanism		型号 Type		CJ6					
		电动机电压 Motor voltage	V	AC380					
		控制回路电压 Control circuit voltage	V	AC220,AC380,DC220					
		分合闸时间 Opening and closing time	s	6±1					
产品重量 Weight of product		不接地 Without earthing	kg	360		500		700	
		单接地 Single earthing	kg	410		600		800	
		双接地 Double earthing	kg	460		700		900	

GW5-40.5、72.5、126户外高压交流隔离开关 GW5-40.5、72.5、126 Outdoor High Voltage Disconnecter



产品简介 General

本产品为双柱水平断口中间开启式，可以一侧或两侧附装接地开关。90°传动的隔离开关采用CS17型人力操作机构进行三级联动操作；180°传动的隔离开关采用CJ6型电动机操作机构进行三级联动操作；接地开关采用CS17G人力操动机构三级联动操作。

本系列隔离开关属双柱V形水平开启式，各单级都由基座、支柱绝缘子、出线座及触头等部分组成，形成50°夹角的两个支座、支柱绝缘子两支柱绝缘瓷瓶相互夹角地安装在基座两端地轴承上，且与基座垂直。主导电部分分别安装在两支柱绝缘瓷瓶上方，随支柱绝缘瓷瓶作约90°转动。

出线座中的紫铜编织带软连接分别紧固在导电杆和接线板上，接线板供用户连接线路之用。

中间触头部分的触指成对装配，采用自力型触指，其形式为转入式，以减少分、合闸时触头与触指间的磨损，提高使用寿命。

隔离开关附有接地开关时，主导电回路与接地开关的连锁用基座上的扇形板与弧形板保证，在主导电回路合闸时，接地开关不可合闸，接地开关合闸时，主导电回路不可合闸。

GW5 series outdoor high voltage disconnecter is a three phase AC switching device for 50 to 60HZ high voltage. It is used for breaking the circuit when there is voltage but without load in the power system with the maximum voltage of 40.5kv.72.5kv or 126kv.

According to the usage, the product is divided into ordinary, anti-dirt and special(Z)types. The special type is further divided into three types, which are mounted in a side, up-side-down or inclining way, so the mounting is flexible.

The earthed switching part of the product has two ways of earthing,i.e.single or double earthing. The earthing switch has a structure of type I or type II and the electric parameters of the type II earthing switch has the same short-circuit withstand ability as the disconnecter switch.

The product is provided with a manual or motor operating device and an electromagnetism lock can also be fitted to prevent from wrong operation. The exposed parts are all made of stainless steel or processed with aluminum alloy processing technology or hot-zinc-plating technology to ensure operation with no corrosion for a long period of time, and further ensure the flexibility and reliability of the product, satisfy the requirements in the different areas.

产品特点

隔离开关采用双柱中开、触头转入式结构，具有自清洁触头的的能力，提高了接触可靠性；

触指采用高强度、高导电率、高弹性的新型材料制造。依靠触指自身的弹力夹紧触头，避免了目前因弹簧锈蚀，发热退火而引起的触头夹紧力降低接触电阻增加，触头发热加剧的恶性循环。

隔离开关转动部分按免维护的要求设计。转动座设计成密封结构，水汽尘埃、有害气体无法进入，使轴承、二硫化钼锂基润滑脂永远工作在良好的环境中，轴承永不生锈，润滑脂无法流失，永不干涸，使隔离开关长期运行后的操作力矩不会增加。采用不锈钢轴销与无油自润滑轴承相配合结构钢制件采用热镀锌，确保隔离开关操作灵活、轻便、可靠、永不锈蚀。

型号及含义 Model and Implication



使用条件 Normal Service Conditions

- 海拔高度：1000-3000m;
 - 最高环境高度不高于+40℃，最低温度环境温度不低于-30℃，高寒地区不低于-40℃；
 - 风速不超过35m/s;
 - 地震裂度不超过8度；
 - 覆冰厚度不大于10mm;
 - 安装场所应无易燃、易爆危险品、化学腐蚀及剧烈振动；
 - 支柱绝缘子污秽等级；普通型为0级、防污型为II级。
- Altitude:1,000-3,000m
 - Ambient temperature: no more than 40℃ and -30℃ (no less than -40℃ in alpine areas)
 - Wing velocity: ≤ 35m/s
 - Earthquake intensity: ≤ 8
 - Ice thickness: ≤ 10mm
 - The installation location shall be free from flammable, explosive dangerous articles, chemical corrosion and fierce vibration
 - The pollution grade of post insulator: 0 for general type and II for pollution resistance type.

完善化隔离开关特点说明

- 全部采用热镀锌工艺防腐处理，热镀锌不能保证配合要求转动的部位一般均采用不锈钢材料，紧固件M8以下采用不锈钢，其余均采用热镀锌。
- 导电部分铜管软连接型，中间触头为“握手”式自力型触指，弹簧外压式无电流通过，隔离开关只有中间一个接触点，其余均用软连接固定联接。
 - 采用新的触头结构，将触片一端与触座固定，靠触片变形及弹簧产生接触压力，使触指末端的滑动接触改为固定接触，提高导电可靠性；
 - 触指弹簧改为外置式，以避免弹簧分流；
 - 增加磁锁板，提高动热稳定性能。
- 转动部分配有自润滑套，无需润滑脂。
- 主接线端子为平板型。电流等级为630A时，导电部件表面镀锡；电流等级为1250A-4000A时，导电部件表面镀银。
- 瓷件上、下帽采用热镀锌防锈，并根据使用地区污秽等级的不同可选用不同爬距的瓷件；在生产制造过程中按正差控制，爬电距离设计时将公称值较标准值设计的高。
- 开关用支柱绝缘子强度密度大、稳定可靠。配方采用高强度瓷料制造，减少了产品强度的分散性，增加了产品的抗拉强度，结构设计时已对产品已有较大的强度预留度，使产品在运行中保证稳定可靠。

主要技术参数 Main Technical Parameters

项目 Item			单位 unit	参数 Technical Parameters		
额定电压 Rated voltage			KV	40.5	72.5	126
额定绝缘 水平 Rated insulation level	1min工频耐受电压(有效值) 1min power frequency withstand voltage	对地 To earth	kV	95	140	230
		断口 Across open DS	kV	118	160	265
	额定雷电冲击耐受电压(峰值) Rated lightning impulse withstand voltage	对地 To earth	kV	185	325	550
		断口 Across open DS	kV	215	375	630
额定频率 Rated frequency			HZ	50		
额定电流 Rated current			A	630 1250 1600 2000		
额定短时耐受电流 Short time withstand current 4s(Eff).			KA	20 31,5 40 40		
额定峰值耐受电 Rated peak withstand current			KA	50 80 100 100		
额定短路持续时间 Rated duration of short-circuit			S	4/2		
额定端子 机械负荷 Rated mechanical terminal load	水平纵向负荷Level of vertical load		N	750	1000	
	水平横向负荷Level of lateral load		N	500	750	
	垂直力Vertical force		N	750	1000	
爬电距离 Creepage Distance			Mm	1013-1256	1813-2248	3150-3906
机械寿命 Mechanical life			次 Times	2000		
人力操动机构 Manual operating mechanism	型号 Type			CS17,CS17G		
	控制回路电压 Control circuit voltage		V	AC220 , DC110 , DC220		
电动机操动机构 Moter drive mechanism	型号 Tpye			CJ6		
	电动机电压 Motor voltage		V	AC380		
	控制回路电压 Control circuit voltage		V	AC220 , AC380 , DC220		
	分合闸时间 Opening and closing time		S	6±1		
产品重量 Weight of product	不接地 Without earthing		KG	360	500	800
	单接地 Single earthing		KG	390	560	900
	双接地 Double earthing		KG	430	620	1000

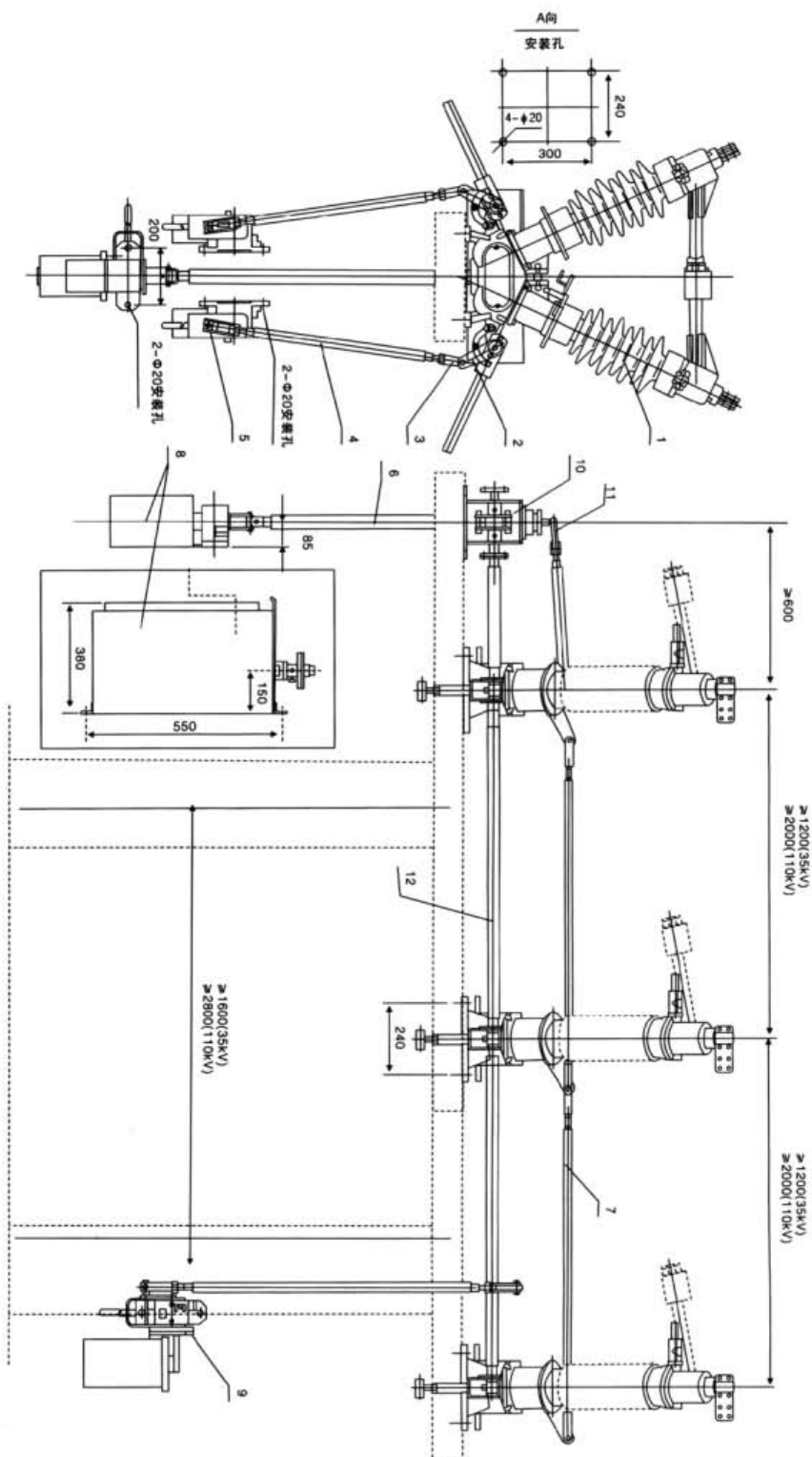
订货须知 Order Notice

产品订货时应详细说明规可知、型号、类型（防污），有无接地、单接地、双接地、电操或手操。特殊要求应与制造厂协商。

When putting the order, please indicate the specifications, models, types (pollution resistance); without earthing, single earthing or dual earthing, electrical control or manual control. Please make compromise settlement with the manufacture on special requirements.

1.开关 2.主刀闸连杆(用户自备) 3.接地闸刀扭杆(用户自备) 4.扭杆接头 5.操动扭杆(用户自备) 6.接地闸刀操动扭杆(用户自备) 7.CS17型手动机构'

外形及安装尺寸图 Overall and Installation Dimension



- 三极开关与CS17-G机构的联装(双接地型)
1. 开关
 2. 拐臂
 3. 接地刀连接头
 4. 接地闸刀操作连杆(用户自备)
 5. 手动机构连接轴
 6. 操动扭杆(用户自备)
 7. 主闸刀连杆(用户自备)
 8. CS17G5型 手动机构或CJ6电动机机构
 9. CS17G2型手动机构
 10. 传动箱
 11. 传动箱联结器
 12. 接地闸刀扭杆(用户自备)
- 注: 操动机构也可安装于两相之间或右端

GN19-12(C)系列户内高压隔离开关 GN19-12(C) Series Indoor High-voltage Disconnecting Switch

型号及含义 Model and Implication

G N 19 - 12 (C) □ - □ - □

加装带电显示装置X

Be equipped with live displaying device X

派生说明G-高压型 W-防污型

Derivation description G-HV type W-antipollution type

额定电流Rated current (A)

窗墙式：C1-转动在穿墙侧C2-开断在穿墙侧

C3-两侧均在出墙侧

Wall-passing type:

C1-rotating at the wall-passing side

C2- breaking at the wall-passing side

C3-both sides are at wall-outgoing side

额定电压Rated voltage (kV)

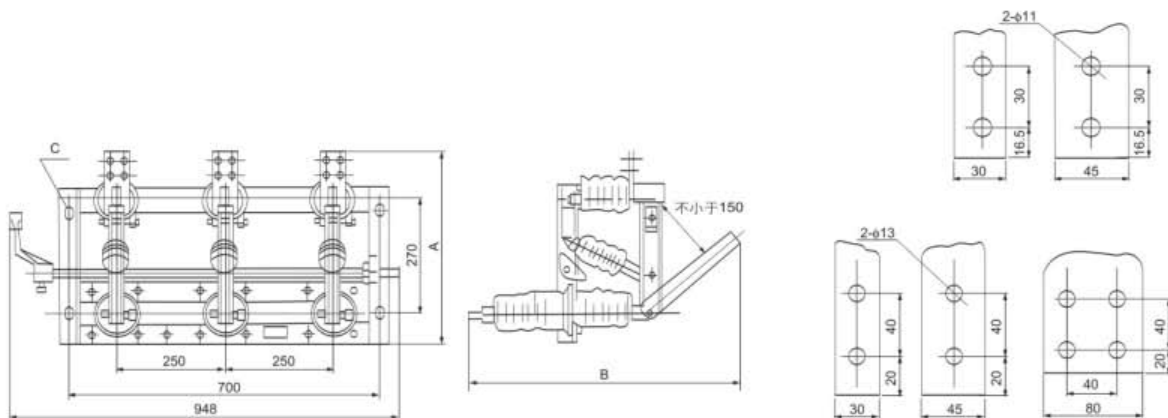
设计序号Design No.

户内型Indoor type

隔离开关Disconnecting switch



外形及安装尺寸图 Overall and Installation Dimension



主要技术数据 Main Technical Data

型号 Model	额定电压 Rated voltage kV	额定电流 Rated current A	额定短时耐受电流(4s) Rated short-time withstand current 4s kA	额定峰值耐受电流 Rated peak withstand current kA
GN19-12/400-12.5	12	400	12.5	31.5
GN19-12/630-20	12	630	20	50
GN19-12/1000-31.5	12	1000	31.5	80
GN19-12/1250-31.5	12	1250	31.5	80
GN19-12(C)/400-12.5	12	400	12.5	31.5
GN19-12(C)/630-20	12	630	20	50
GN19-12(C)/1000-31.5	12	1000	31.5	80
GN19-12(C)/1250-31.5	12	1250	31.5	80

GN30-12(D)系列户内高压隔离开关 GN30-12(D) Series Indoor High-voltage Disconnecting Switch

型号及含义 Model and Implication

G N 30 - 12 (D) □ - □ - □

额定短时耐受电流 Rated short-time withstand current

额定电流 Rated current (A)

派生代号(G)为高原型

Derivation description G-plateau type

带接地装置 With earthing device

额定电压 Rated voltage (kV)

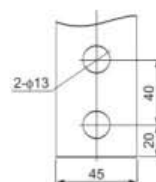
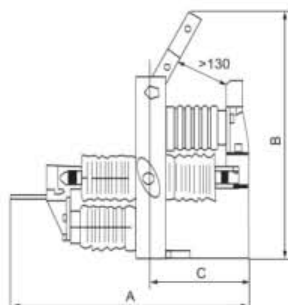
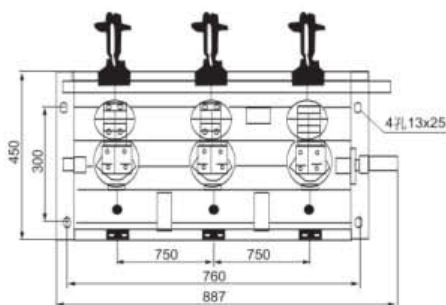
设计序号 Design No.

使用场所(户内) Operation place (indoor)

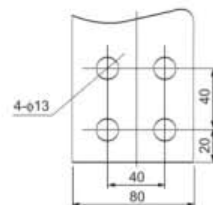
隔离开关 Disconnecting switch



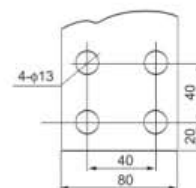
外形及安装尺寸图 Overall and Installation Dimension



GN30-12(D)/400A, 630A



GN30-12(D)/1000A



GN30-12(D)/1250A

400A, 630A			1000A			1250A		
A	B	C	A	B	C	A	B	C
~55	~610	~240	~57	~615	~245	~58	~600	~295

主要技术数据 Main Technical Data

项目 Item		GN30-12/400-12.5 GN30-12D/400-12.5	GN30-12/630-20 GN30-12D/630-20	GN30-12/1000-31.5 GN30-12D/1000-31.5	GN30-12/1250-31.5 GN30-12D/1250-31.5	GN30-12/1600-31.5 GN30-12D/1600-31.5
额定电压 Rated voltage (kV)		12	12	12	12	12
额定电流 Rated current (A)		400	630	1000	1250	1600~3150
额定短时耐受电流 Rated short-time withstand current (kA)		12.5	20	31.5	31.5	40
额定短路持续时间 Rated short-circuit duration (s)		4	4	4	4	4
额定峰值耐受电流 Rated peak withstand current (kA)		31.5	50	80	80	100
额定绝缘 水平 Rated insulation level	1min 工频耐受电压 1min power frequency withstand voltage	极间、极对地42 断口49 Pole-to-pole, pole-to-ground 42, break 49				
	额定雷电冲击耐受电压 Rated lightning impulse withstand voltage	极间、极对地75 断口85 Pole-to-pole, pole-to-ground 75, break 85				

VACUUM CIRCUIT BREAKER

▶ 真空断路器



ZW7-40.5系列户外高压真空断路器 ZW7-40.5 Series Outdoor High Voltage Vacuum Circuit Breaker



概述 Product Structure

ZW7-40.5型系列户外高压真空断路器系三相交流50Hz,额定电压为40.5kV的户外高压电器设备.附装弹簧操动机构或电磁操动机构,可以远控电动分,分闸,也可以就地手动储能,手动分,合闸.设计性能符合GB1984-89交流电压断路器国家标准的要求,并满足IEC-56高压交流断路器国际电工委员会标准的要求.ZW7-40.5型真空断路器,主要用于户外35kV输变电系统的控制和保护,也适用于城乡配电网及工矿企业的正常操作与短路保护之用.该产品总体结构为瓷瓶支柱式;上瓷瓶内装真空灭弧室,下瓷瓶为支柱瓷瓶.适用于频繁操作的场所.并具有密封性好,抗老化,耐高压,不燃烧,无爆炸,使用寿命长,安装维护方便等特点.

ZW7-40.5 series outdoor high vacuum circuit breaker phase AC 50Hz, rated voltage of 40.5kV outdoor high-voltage electrical equipment. Spring mechanism attached to or electromagnetic actuator can remote control electrical sub-, sub-gate can also be storage place manually, manually opening and closing. design performance meet GB1984-89 AC voltage circuit breaker as the national standard, and meet IEC-56 high voltage AC circuit breakers IEC standards.ZW7-40.5 Type vacuum circuit breaker is mainly used for outdoor 35kV power transmission system control and protection also applies to urban and rural power distribution networks and industrial and mining enterprises in the normal operation and short circuit protection purposes. The product overall structure of the pillars for the vase style; on insulator mounted within the vacuum interrupter, the main column under the porcelain vase porcelain vase. for frequent operation place. and have good sealing, anti-aging, high pressure, no burning, no explosion, long service life, installation and maintenance and convenient.

产品型号说明 Mode Description



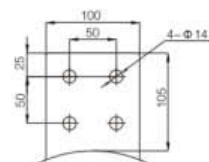
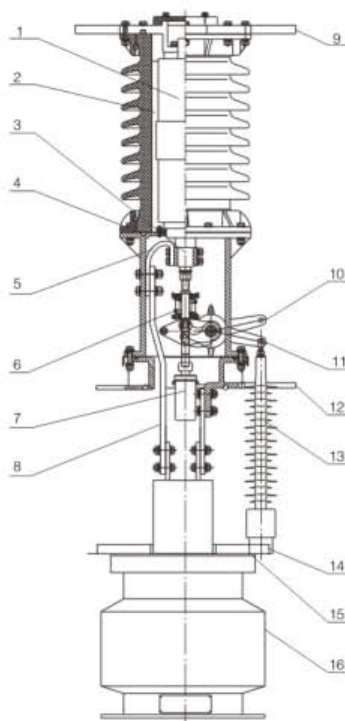
使用条件 Service Conditions

1. 周围空气温度: 上限+40℃, 下限-30℃
2. 海拔≤1000m(若需增高海拔, 则额定绝缘水平相应提高);
3. 风压: 不超过700pa (相当于风速34m/s4. 振幅: 地震度8度;
5. 污秽等级: III级
6. 最大日温差: 不超过25℃
1. Ambient Temperature: -30℃ ~ +40℃
2. Altitude: ≤1000m (if the altitude increased, then the insulation must be higher)
3. Wind Pressure: no more than 700Pa (equal to 34m/s wind speed)
4. Earthquake Level: no greater than 8
5. Pollution Level: IV
6. Maximum Temperature Drop: no more than 25℃

主要技术参数 Technical Parameters

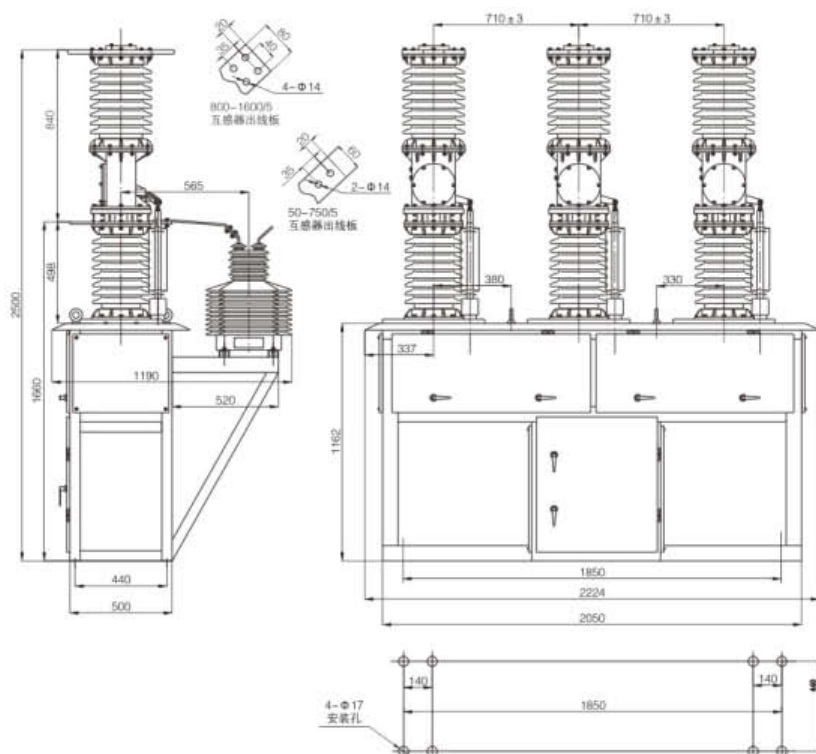
名称 Name			单位 Unit	数值 Data
额定电压Rated Voltage			KV	40.5
额定绝缘水平 Rated Insulation Level	1min工频耐受电压（有效值） 1Min Power Frequency withstand Voltage	干Dry		95
		湿Wet		80
	雷电冲击耐受电压（峰值） Lightning Impulse withstand Voltage(Peak)			185
额定电流Rated Current			A	630；1000；1250
额定短路开断电流（有效值）Rated Short-circuit Breaking Current			KA	12.5；16；20
额定操作顺序Rated Operating Sequence				分-0.3s-合分-180s-合分 O-0.3s-CO-180s-CO
额定短路开断电流次数Rated Short-circuit Opening Times			Times	12
额定短路关合电流（峰值）Rated Short-circuit Closing Current(Peak)			KA	50;63;80
额定峰值耐受电流Rated Peak withstand Current				20;25;31.5
额定短路耐受电流Rated Short Time withstand Current			s	4
额定短路持续时间Rated Short-circuit Duration			m/s	1.5±0.2
平均合闸速度Average Closing Speed				0.7±0.2
平均分闸速度Average Opening Speed				≤150
合闸时间Closing Time				≤60
分闸时间Opening Time				
机械寿命Mechanical Life			Times	10000
额定操作电压及辅助回路额定电压 Rated Operating Voltage and Auxiliary Circuit Rated Voltage			V	AC110/220
每相回路直流电阻（不含互感器）DC Current Resistance of Each Phase (Without transformer)			μ Ω	≤100
重量 Weight			KG	800

外形及安装尺寸图

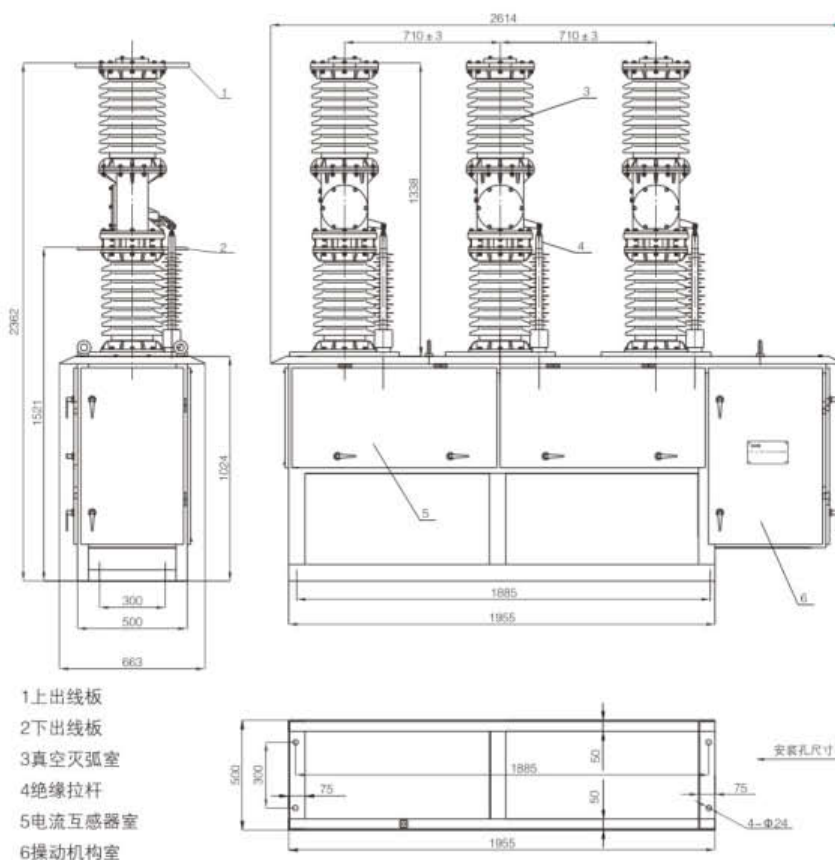


断路器上、下进出线板尺寸

- | | |
|----------|----------------|
| 1. 真空灭弧室 | 2. 填充硅脂 |
| 3. 导电夹 | 4. 密封圈 |
| 5. 软连接 | 6. 触头弹簧 |
| 7. 油缓冲 | 8. 软连接 |
| 9. 进出线板 | 10. 分闸位置 |
| 11. 合闸位置 | 12. 进出线板 |
| 13. 绝缘拉杆 | 14. 底板 |
| 15. 密封圈 | 16. 电流互感器(内置式) |



ZW7-40.5型(中置式-外置互感器)户外高压真空断路器结构示意图二



- 1上出线板
- 2下出线板
- 3真空灭弧室
- 4绝缘拉杆
- 5电流互感器室
- 6操动机构室

ZW7-40.5型(水平式内置互感器)户外高压真空断路器结构示意图三

ZW32-12/24系列户外高压真空断路器 ZW32-12/24 Outdoor Ac Vacuum Circuit Breaker



概述 Product Structure

ZW32-12系列户外交流高压真空断路器(以下简称断路器)为额定电压12KV、三相交流50Hz的户外配电设备。主要用于开断、关合电力系统中的负荷电流、过载电流及短路电流。适用于变电站及工矿企业配电系统中作保护和控制之用,及农村电网频繁操作场所。也可作为电网的分段开关,加装控制器后,可实现配网自动化。

ZW32-12/24 model outdoor AC vacuum circuit breaker is used to make and break load current, overload current and short-circuit current in 12/24kV, 50/60Hz power system. It is applicable for substations, industry and mining, urban and rural electricity power networks, especially for occasions with frequent operation and automatic power distribution network. It accords with the standard of IEC622 71-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV General technical requirement of switch and control apparatus.

型号及其含义 Model description

ZW	32	-	12	/	T	□	-	□	
									额定短路开断电流 Rated short-circuit breaking current (kA)
									额定电流 Rated current (A)
									弹簧操作机构 Permanent magnet operation mechanism
									额定电压 Rated voltage (kV)
									设计序号 Design serial No.
									户外 Outdoor
									真空断路器 Vacuum circuit breaker

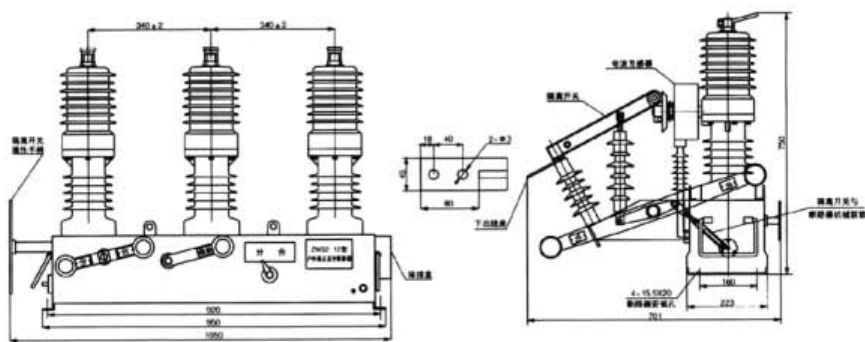
使用环境条件 Ambient condition

- 海拔不超过2000m
- 环境温度: -40℃~+40℃。
- 风压不超过700Pa(相当于风速34m/s)。
- 地震烈度不超过8度。
- 环境污秽耐受值: IV级。
- 覆冰厚度: 20mm。
- 安装场所应为无易燃、爆炸、化学腐蚀物质及经常性剧烈振动的场所。
- Altitude: ≤2000mm;
- Ambient temperature: -40℃~+40℃
- Wind speed: 34m/s;
- Earthquake intensity: ≤8 degree;
- Ambient pollution: IV;
- Ice thickness: 20mm;
- Applicable occasions should be free from inflammables, explosives, corrosives and severe vibrations.

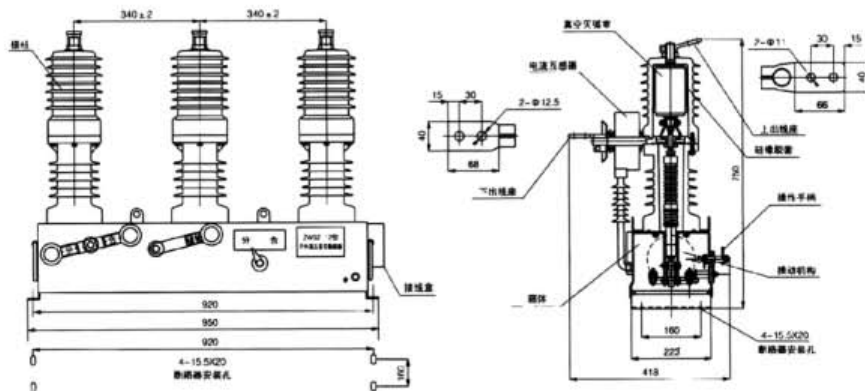
主要技术参数 Technical Parameters

序号 No.	名称 Name			单位 Unit	数值 Data	
					12KV	24KV
1	额定电压 Rated voltage			KV	12	24
2	额定电流 Rated current			A	630、1250	630、1250
3	额定绝缘水平 Rated insulating level	1min工频耐受电压 1min. PF withstand voltage	干dry	KV	相间、对地42，断口49 42(across open contacts:49)	相间、对地65，断口79 65(across open contacts:79)
			湿wet		34	50
4		雷电冲击耐受电压（峰值） Lightning impulse withstand voltage(peak)		KV	相间、对地75，断口85 75(across open contacts:85)	相间、对地125，断口145 125(across open contacts:145)
5	额定短路开断电流 Rated short-circuit breaking current			KA	20	25
6	额定短路关合电流(峰值)Rated short-circuit making current (peak)			KA	50	63
7	额定峰值耐受电流 Rated peak withstand current			KA	50	63
8	4s额定短时耐受电流 4s rated short-time withstand current			KA	20	25
9	额定操作顺序 Rated operating sequence				分 — 0.3 — 合分 — 180s — 合分 O-0.3s-CO-180s-CO	
10	额定短路开断电流次数 Breaking times of rated short-circuit breaking current			次 times	30	
11	机械寿命 Mechanical duration			次 times	10000	
12	储能电机额定电压			V	DC或AC220	
13	额定操作电压 Rated operation voltage			V	DC或AC220	
14	动静触头允许磨损厚度 Abrasions thickness of contacts			mm	3	
15	过电流脱扣器额定电流 Rated current of over-current release			A	5	
16	电流互感器电流比 Current transformer ratio				200/5, 400/5, 600/5 (Protection degree: III class, Class: 0.5)	

外形及安装尺寸图 Outline dimension and installation drawing



ZW32-12G型真空断路器结构及安装尺寸



ZW32-12型真空断路器内部结构及安装尺寸

ZW8-12 ZW8-12G系列户外高压真空断路器 ZW8-12 ZW8-12G Series Outdoor High Voltage Vacuum Circuit Breaker



概述 Product Structure

ZW8 - 12系列户外高压真空断路器为额定电压12kV，三相交流50Hz的户外高压开关设备，主要用来开断合农网、城网和小型电力系统的负荷电流、过载电流、短路电流。该产品总体结构为三相共箱式，三相真空灭弧室置于金属箱内，利用SMC绝缘材料相间绝缘及对地绝缘，性能可靠，绝缘强度高。

ZW8 - 12G是由ZW8 - 12断路器与隔离刀组合而成的，称为组合断路器，可作为分段开关使用，也可自备电源，有内置PT与外置PT。

本系列产品的操动机构为CT23型弹簧储能操动机构，分为电动和手动而成。

ZW8-12 model outdoor AC vacuum circuit breaker is used to make and break load current, overload current and short-circuit current in 12kV, 50/60Hz power system. Its applicable for substations, industry and mining, urban and rural electricity power networks, especially applicable in occasions with frequent operation and automatic power distribution network. It accords with the standards of IEC62271-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV General technical requirement of switch and control apparatus.

结构特点 Structure Feature

1. 用真空灭弧室灭弧。
2. 采用硅橡胶、工程塑料复合绝缘，避免了油绝缘中因为油劣化引起绝缘事故的可能性。
3. 与控制器组合，可做自动重合器或自动分段器使用。
1. Vacuum arc extinguish.
2. Silicon rubber and plastic composite insulation.
3. It can be matched with controller as automatic recloser and auto-sectionalizer.

型号及其含义 Model description

ZW	8	-	12	G	/	T	□	-	□	
										额定短路开断电流 Rated short-circuit breaking current (kA)
										额定电流 Rated current (A)
										弹簧操作机构 Spring operating mechanism
										额定电压 Rated voltage(kV)
										设计序号 Design serial No.
										户外 Outdoor
										真空断路器 Vacuum circuit breaker

使用环境条件 Ambient condition

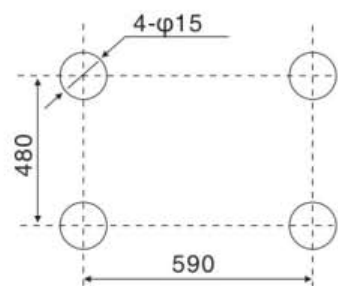
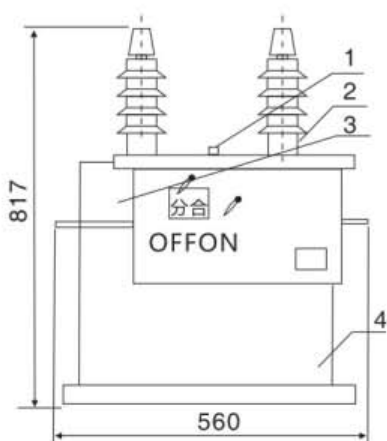
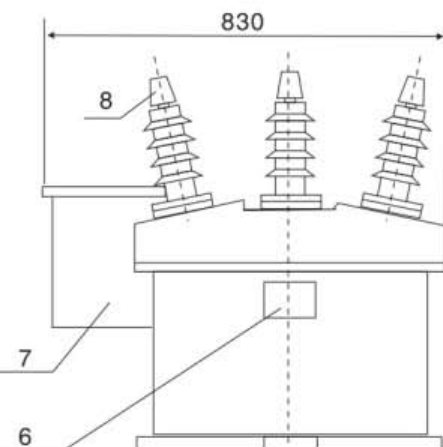
1. 海拔不超过2000m。
2. 环境温度：-35℃~+40℃。
3. 相对湿度：月平均不超过90%；日平均相对湿度不大于95%；
4. 地震烈度不超过8度。
5. 环境污秽耐受值：IV级。
6. 覆冰厚度：120mm。
7. 气压不超过700Pa（相当于风速34m/s）。
8. 安装场所应为无易燃、爆炸、化学腐蚀物质及经常性剧烈振动的场所。

1. Altitude: $\leq 2000\text{mm}$;
2. Ambient air temperature: $-35^{\circ}\text{C} \sim +40^{\circ}\text{C}$;
3. Wind speed: 34m/s;
4. Earthquake intensity: 8 degree;
5. Relative humidity: monthly average 90%, daily average 95%;
6. Ice thickness: 10mm ;
7. Pollution degree: IV;
8. There will be have dew under the condition of high temperature low down hastily.

主要技术参数 Technical Parameters

序号 No.	名称 Name		单位 Unit	数值 Data		
				6.3KA	12.5KA	20KA
1	额定电压 Rated voltage		kV	12		
2	最高工作电压 Max. operation voltage		kV	12		
3	额定电流 Rated current		A	630		
4	额定短路负载开断电流 Rated short-circuit breaking current		kA	6.3	12.5	20
5	额定短路关合电流(峰值) Rated short-circuit making current		kA	16	31.5	50
6	额定峰值耐受电流 Rated peak withstand current		kA	16	31.5	50
7	额定短时1min耐受电流 Rated short-time withstand current		kA	6.3	12.5	20
8	额定绝缘水平 Rated Insulate level	1min工频耐受电压 1min P.F withstand voltage	KV	42		
		雷电冲击耐受电压（峰值） Lightning impulse withstand voltage(peak)	KV	75		
9	额定操作顺序 Rated operating sequence			分-0.3S-合分-180S-合分O-0.3s-CO-180s-CO		
10	机构寿命 Mechanical life		次Times	10000		
11	额定短路开关电流开关次数 Rated short-circuit breaking current breaking times		次Times	30		
12	操作机构额定合闸电压 Rated Operating Setup Closing Voltage		V	110,220		
13	操作机构额定分闸电压 Rated Operating Setup Opening Voltage		V	110,220		
14	触头开距 Contact Stroke		mm	11±1		
15	超行程(触头弹簧压缩长度) Contact Over travel (Contact Spring Constringent Length)		mm	3		
16	三相分、合闸不同期性 Out Of Simultaneity Of Contact Closing And Opening		ms	≤2		
17	触头合闸弹跳时间 Contact Closing Bounce Time		ms	≤2		
18	平均分闸速度 Average opening Speed		m/s	1.0±0.2		
19	平均合闸速度 Average Closing Speed		m/s	0.7±0.15		
20	分闸时间 Opening Time	最高操作电压下 The Highest Operating Voltage	s	0.015-0.05		
		最低操作电压下 The Lowest Operating Voltage	s	0.03-0.06		
21	合闸时间 Contact Closing Time		s	0.025-0.05		
22	各相主回路电阻(组合断路器主回路电阻) Current by Phase Circuit Resistance		μΩ	≤120(≤200)		
23	动静触头允许磨损累计厚度 Contact erosion limit		mm	3		

外形及安装尺寸图 Outline dimension and installation drawing

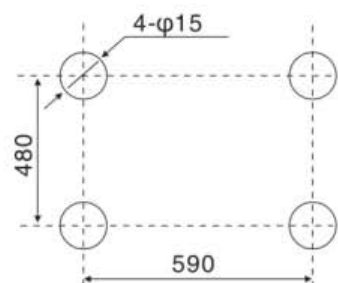
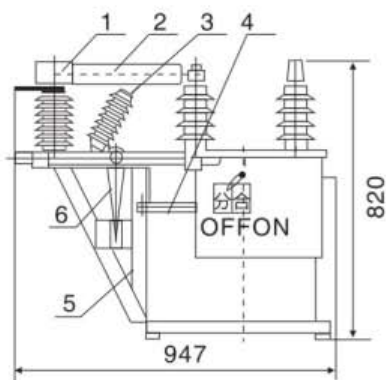
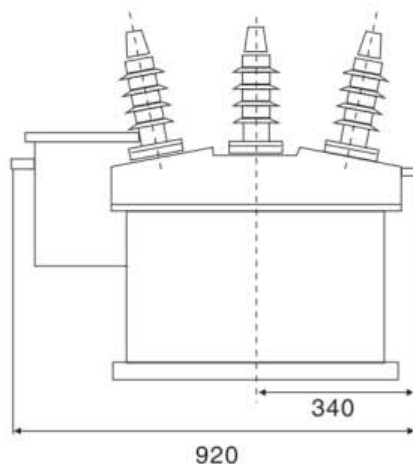


1. 吊环 Lifting ring
2. 套管 Sheath
3. 箱盖 Case cover

4. 箱体 Case
5. 吸湿管 Moisture absorbing tube
6. 铭牌 Nameplate

7. 操作机构 Operation mechanism
8. 导电杆 Conducting rod

ZW8-12系列户外真空断路器



1. 静触头 Static contact
2. 动触头 Moving contact
3. 绝缘拉杆 Insulating pole

4. 断路器 Circuit breaker
5. 隔离刀支架 Bracket of isolator
6. 支柱绝缘子 Post insulator

ZW8-12G系列户外真空断路器

ZW20A-12/24户外高压真空断路器 ZW20A-12/24 Outdoor Hv Vacuum Circuit Breaker



概述 Product Structure

ZW20A-12型户外柱上高压真空断路器为额定电压12kV、三相交流50Hz的户外高压开关设备。主要用于开断、关合电力系统的负载电流、过载电流及短路电流。适用于变电站、工矿企业及城乡配电网作保护和控制，特别适用于操作频繁的场合和城网自动化配电网。本产品与控制器配套，能满足配电自动化系统要求，并能可靠而有效地完成传统的重合器功能。它采用成熟的箱式密封结构，内部充以SF₆气体，具有良好的密封性能，使之不受外界环境影响，是一种免维护产品。其弹簧操动机构采用直动链条主传动和多级脱扣系统，动作可靠性高，是柱上断路器的佳品。

ZW20A-12/24 model outdoor AC vacuum circuit breaker is used to make and break load current, overload current and short-circuit current in 12/24kV, 50/60Hz power system. It's applicable for substations, industry and mining, urban and rural electricity power networks, especially applicable in occasions with frequent operation and automatic power distribution network. It accords with the standards of IEC62271-100 & GB1984 AC high voltage circuit breaker, GB/T 11022 HV General technical requirement of switches and control apparatus.

产品特点 Product Feature

1. 城、农网改造的理想设备：可与控制配套实现遥控、遥测、遥信和摇调，实现“四遥”功能。
2. 操作灵活、方便：本产品为电动储能、电动分合，同时具有手动储能，手动分合，并能近距离或远距离操作。
3. 开断性能优越：开断短路电流25KA达30次。
4. 操作功率小，可靠性高：全新设计的小型电动弹簧机构的操作机构（约30W左右），降低到最低水平。
5. 安装方式灵活：可采用柱上吊装或座装安装方式。
6. 密封性能可靠：SF₆压力为零表压，且采用成熟的密封结构技术，密封性能可靠，不易泄漏。
7. 独特的进出线放方式：采用硅橡胶管，使接线端子之间绝缘距离充裕，外绝缘特性优良。
8. 使用安全：在箱体顶部安装有防爆装置，即使方式内部故障，也不会有高温气体或飞溅物泄漏出来。
1. Ideal apparatus in urban and rural electricity network reform : Remote function: remote control, remote metering, remote communication and remote adjustment.
2. Flexible operating: Both power storage and CO operation are motor and manual operated, remote and local operation are both available.
3. Excellent breaking capability: Break short-circuit current 25kA up to 30 times.
4. Small operation power and high dependability: The small motor-driving spring operation mechanism with new design is of lowest operation power (about 30W).
5. Multiple installations: Pole mounted and pad mounted.
6. Reliable sealing: The mature sealing technology assures reliable sealing performance
7. Particular incoming and outgoing method: Silicon rubber bushing to make enough insulate distance.
8. Safe operation: Anti-explosive device mounted on the top of box prevents heated gas and maters from spattering out when inner fault occurs.

使用环境条件 Ambient condition

1. 周围空气温度：上限+40℃，下限-40℃
2. 海拔≤1000m
3. 风压：不超过700pa(相当于风速34m/s)
4. 最大日温差：不超过25℃
5. 安装场所应为无易燃、爆炸、化学腐蚀物质及经常性剧烈振动的场所。
1. Ambient Temperature: -40℃ ~ +40℃
2. Altitude: ≤1000m
3. Wind Pressure: no more than 700Pa (equal to 34m/s wind speed)
4. Maximum Temperature Drop: no more than 25℃
5. There will be have dew under the condition of high temperature low down hastily.

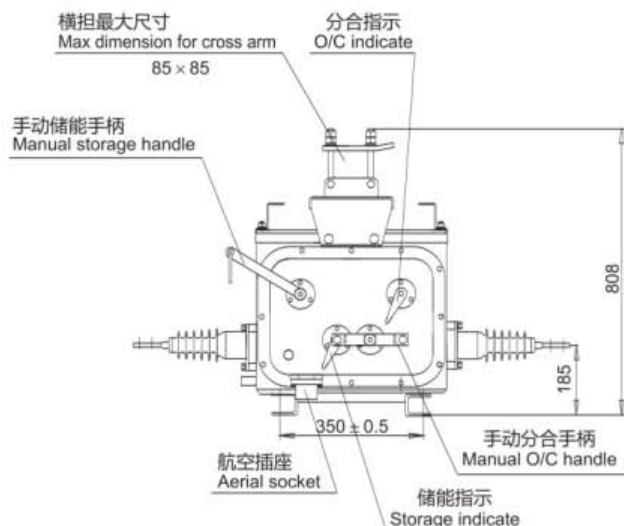
型号及其含义 Model description



主要技术参数 Technical Parameters

序号 No.	名称 Name	单位 Unit	数值 Data
1	额定电压 Rated voltage	kV	12/24
2	额定频率 Rated power frequency	Hz	50
3	额定电流 Rated current	KA	630/1000
4	额定短路开断电流 Rated short-circuit breaking current	kA	12.5、16、20、25
5	额定峰值耐受电流 Rated withstand current(peak)	kA	31.5、40、50、63
6	额定短时耐受电流4s Rated short-time withstand current(4s)	kA	12.5、16、20、25
7	额定短路关合电流（峰值） Rated short-circuit making current(peak)	kA	31.5、40、50、63
8	机械寿命 Mechanical life	次	10000
9	额定短路电流开断次数 Rated short-circuit breaking time	次	30
10	1min 工频耐受电压（相间、对地/断口）	KV	42/49/60
11	雷电冲击耐受电压峰值（相间、对地/断口）	KV	75/85/125
12	二次回路1min 工频耐压	KV	2
13	净重 Weight	Kg	140
14	SF6气体额定压力(表压) SF6 rated gage pressure	Mpa	"0"

外形及安装尺寸图 Outline dimension and installation drawing



基本配置 Basic equipments:

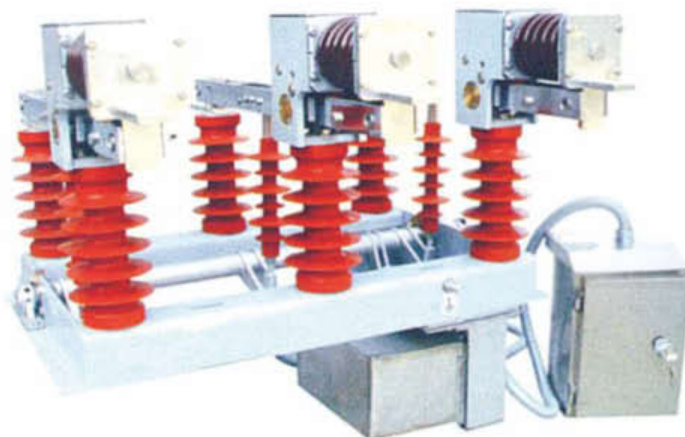
1. 电流互感器保护级2只
2. 弹簧机构220V
3. 避雷装置
1. Current transformer protection poles 2 pieces
2. Spring mechanism AC220V
3. Surge arrester device

可选配置 Optional equipments:

1. 电流互感器计量级3只, 200/5及以上
2. 外置式电压互感器2只（控制电源及计量用）
3. 可与重合控制器及各种FTU, RTU配置使用
1. Current transformer, metering pole 3 pieces 200/5 or higher.
2. Outer voltage transformer 2 pierces (for control power supply and metering).
3. Motor spring mechanism AC/DC220/110/48/24V.
4. Reclosing controller and series FTU and RTU.

备注: 1. 样本图片仅供参考, 以实物为准
2. 如有其他技术要求, 请与本公司联系。

FZW32-12/T630-20户外交流高压隔离真空负荷开关 FZW32-12/T630-20 Outdoor High Voltage Isolating Vacuum Switch



概述 Product Structure

FZW32-12/T630-20型户外高压隔离真空负荷开关(以下简称负荷开关)是三相交流50Hz、额定电压12kV的户外高压开关设备, 适合于开断、关合城市或农村配电系统负荷电流和熔断器的分断转移电流。配以电动机机构和控制器可作为线路分断开关或自动分断器用。由于采用了新型绝缘结构设计和真空灭弧室, 本负荷开关开断后具有时显可见断口, 兼有隔离开关的功能, 此外还有开断容量大、无油, 因而对环境无污染、无爆炸危险、电寿命长和免维护等特点。

本负荷开关适用于额定电压12kV、额定电流630A、三相交流50Hz的供电网络中, 带负荷开断和关合配电线路, 亦可作为开断和关合空载线路、空载变压器使用, 在分闸位置, 能满足对隔离开关的隔离电源要求。本负荷开关可用于电力、冶金、矿山、化工等部门的输配电系统做控制电路用, 亦适合频繁操作的场所。

Each technical performance index of type FZW32-12/T630-20 outdoor high voltage isolating vacuum load switch completely reached GB3804 and IEC standards. It is suitable for power supply network with rated voltage of 12kV, rated current of 630A and 3-phase AC 50Hz and used for closing and opening load current.

使用环境条件Ambient condition

- | | |
|-----------------------------------|--|
| 1. 环境温度: +40°C ~ -30°C ; | 1. Ambient temperature : + 40°C ~ - 30°C ; |
| 2. 海拔高度: 不超过1000米 ; | 2. Altitude above sea level not exceed 1000m ; |
| 3. 相对湿度: 日平均值不大于95%, 月平均值不大于90% ; | 3. Relative humidity : Daily average value not exceed 95% , Monthly average value not exceed 90% ; |
| 4. 无经常性剧烈振动。 | 4. No frequent extreme vibration. |

型号及其含义 Model description

FZW	32	-12	/T	630	-	20	
							额定短时耐受电流 Rated short-time withstand current(KA)
							额定电流 Rated current(A)
							弹簧操作机构Spring operating mechanism
							额定电压Rated voltage(KV)
							设计序号Serial No. of design
							户外真空负荷开关Outdoor Vacuum Load switch

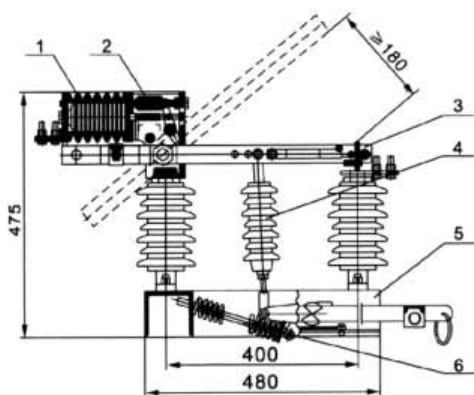
产品特点 Product Feature

1. 采用真空灭弧室灭弧、无爆炸危险、不需检修；
 2. 隔离刀与三相真空灭弧室联动，分闸时有的隔离断口；
 3. 机体的零部件全部采用不锈钢材料，底架采用不锈钢材料和热镀锌外加防紫外线保护涂料的碳钢，确保了机体在户外环境下的正常运行；
 4. 安装方式以单杆式操作为主，可采用手动、电动或遥控操作；
 5. 广泛适用于农网、城网、铁路等配置线路改造；
 6. 开断能力大、安全可靠、电寿命长、可频繁操作。
1. Vacuum interrupter is adopted without explosion danger and maintenance；
 2. Isolating blade and 3-phase interrupter are in group operation，there is isolating open contacts in opening operation；
 3. Parts of the equipment body adopt completely stainless steel, the stainless steel and carbon steel with galvanizing plus ultra violet ray protection coating are used for the base frame，thus ensuring normal operation of the equipment under outdoor environment；
 4. The type of installation mainly takes single pole operation and manual, motor or remote operation are available；
 5. It is used widely in modification of distribution line like rural network, urban network and railway etc；
 6. It has such features as strong breaking ability, safety and reliability, long electrical endurance and suitable for frequent operation.

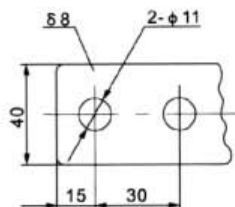
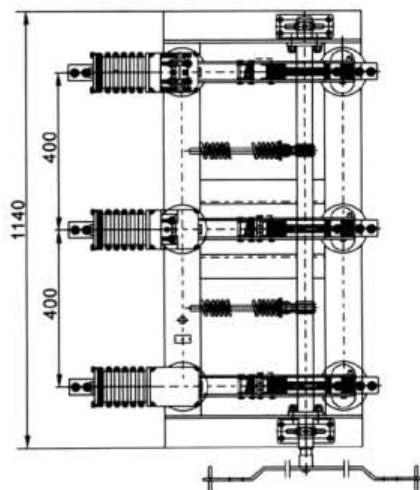
主要技术参数 Technical Parameters

序号 No.	名称 Name	单位 Unit	数值 Data
1	额定电压 Rated voltage	KV	12
2	额定频率 Rated frequency	Hz	50
3	额定电流 Rated current	A	630
4	额定有功负载开断电流 Rated active load breaking current	A	630
5	额定闭环开断电流 Rated loop breaking current	A	630
6	5%额定有功负载开断电流5% Rated active load breaking current	A	31.5
7	额定电缆充电开断电流 Rated cable charging breaking current	A	10
8	额定空载变压器开断容量 Rated no load transformer breaking capacity	KVA	1600
9	额定开断电容器组电流 Rated breaking capacitor bank current	A	100
10	1min工频耐受电压：真空断口、相间、相对地/隔离断口 P.f withstand voltage for 1min: Across vacuum open contacts, between phases、phase to earth /across open contacts	KV	42/48
11	雷电冲击耐受电压：相间、相对地/隔离断口 Lightning impulse withstand voltage： between phases、phase to earth /across open contacts?	KV	75/85
12	额定短时耐受电流(热稳定) Rated short time withstand current	KA	20
13	额定短路持续时间 Rated short circuit duration	s	4
14	额定峰值耐受电流(动稳定) Rated peak withstand current?	kA	50
15	额定短路关合电流 Rated short circuit making current?	kA	50
16	机械寿命 Mechanical endurance	次 Time	10000
17	真空灭弧室触头允许磨损厚度 Allowable wear thickness of contact of vacuum interrupter	mm	0.5
18	操作力矩 Operating torque	Nm	≤200

外形及安装尺寸图 Outline dimension and installation drawing



1. 真空灭弧室 Vacuum interrupter
2. 分闸弹簧 Opening spring
3. 隔离刀组件 Isolating blade assembly
4. 绝缘拉杆 Insulating rod
5. 框架 Frame
6. 过中弹簧机构 Spring mechanism passing central point



安装方式 Type of installation	横向宽度 Horizontal width	AB相间间距 Distance between phase A and B	BC相间间距 Distance between phase B and C
单杆水平安装 Single pole horizontal installation	1300	750	320
单杆侧装 Single pole side installation	1230	500	500
单杆杆顶安装 Single pole side installation	1050	400	400

订货须知 Ordering

订货时应注意：

1. 产品型号、名称、规格、数量；
2. 备件的名称、规格及数量等；
3. 操作方式是手动还是电动，请在订货时注明；
4. 注明安装方式。

Please specify when ordering :

1. Type, description, specification and quantity of product ;
2. Description, specification and quantity of spare parts ;
3. Specify in ordering the type of operation : Manual or motor operating mechanism ;
4. Type of installation.

ZW32M-12系列户外高压永磁真空断路器 ZW32M-12 series of outdoor high voltage permanent magnet vacuum circuit breaker



概述 Product Structure

ZW32M-12型户外高压真空断路器为额定电压12kV,三相交流50Hz的户外配电设备,它主要用来开断、关合电力系统中的负荷电流、过载电流、短路电流。适用于变电站及工矿企业配电系统中作保护和控制作用,及农村电网频繁操作的场所。

本断路器具有体积小、重量轻、防凝露、免维护等特点,能适应较恶劣的气候条件和污秽环境。

该型号产品采用永磁操作机构进行操作;由于永磁操作机构由永磁体提供动作能量,使开关快速保持在分闸位置,其机械零件数量少、机械传动链短,从而大大提高了开关的可靠性和机械寿命。

ZW32M-12 type outdoor high voltage vacuum circuit breaker is rated voltage 12kV, three-phase AC 50Hz outdoor distribution equipment, which is mainly used for breaking, closing power system load current, overload current, short-circuit current. For substation and industrial and mining enterprises distribution system for the protection and control of the role and place of rural power grids frequent operation.

The circuit breaker has small size, light weight, anti-condensation, maintenance-free characteristics, can adapt to poor weather conditions and dirty environments.

The models with permanent magnet operating mechanism operates; since the permanent action energy operating mechanism provided by a permanent magnet, the switch quickly to keep the points off position, a small number of mechanical parts, mechanical transmission chain is short, thus greatly improving the switch reliability and mechanical life.

符合标准 Standards Compliant

GB1984 《交流高压断路器》

GB1102 《高压开关设备和控制设备标准的共同技术要求》

GB311.1-6 《高压输变电设备的绝缘配合》

GB763 《交流高压电器在长期工作时的发热》

GB2706 《交流高压电器动、热稳定试验方法》

GB3309 《高压开关设备在常温下的机械试验》

DL/T593 《高压开关设备的共同订货技术条件》

GB1984 "AC high voltage circuit breakers"

GB1102 "high-voltage switch and control equipment standards common technical requirements"

GB311.1-6 "insulated high voltage transmission and distribution equipment."

GB763 "AC high voltage electrical work in long-term fever"

GB2706 "AC high voltage electrical dynamic and thermal stability test methods"

GB3309 "high voltage switch at room temperature mechanical test"

DL / T593 "common ordering technology high voltage switch"

使用环境条件 Service Condition

1. 周围空气温度: $-40^{\circ}\text{C} \sim +45^{\circ}\text{C}$

2. 海拔高度: 不超过2000m

3. 周围空气可以受到尘埃、烟、腐蚀性气体、蒸汽或盐雾的污染

4. 风速不超过34m/s(相当于圆柱表面上的700pa)

5. 来自开关设备和控制设备处的振动或地动是可以忽略的

6. 污秽等级: IV级

1. The ambient air temperature: $-40^{\circ}\text{C} \sim +45^{\circ}\text{C}$

2. Altitude: not exceed 2000m

3. The ambient air can be contaminated dust, smoke, corrosive gases, vapors or salt spray the wind speed does not exceed 34m / s (equivalent to 700pa on the cylindrical surface)

5. vibration or earth from the switch and control equipment at the Ministry is negligible

6. Contamination Level: IV Class

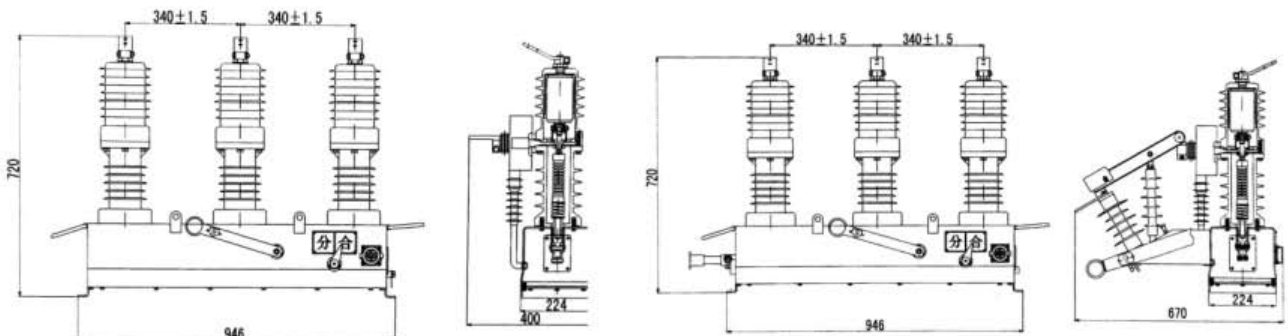
型号及其含义 Model description



主要技术参数 Technical Parameters

序号 No.	名称 Name	单位 Unit	数值 Data
1	额定电压 Rated voltage	kV	12
2	额定频率 Rated power frequency	Hz	50
3	额定电流 Rated current	kA	630/1250
4	额定短路开断电流 Rated short-circuit breaking current	kA	20/25
5	额定峰值耐受电流 Rated withstand current(peak)	kA	50/63
6	额定短时耐受电流4s Rated short-time withstand current(4s)	kA	20/25
7	额定短路关合电流 (峰值) Rated short-circuit making current(peak)	kA	50/63
8	机械寿命Mechanical life	次Secondary	10000
9	额定短路电流开断次数 Rated short-circuit breaking time	次Secondary	30
10	工频耐受电压(1min):(湿)(干)相间、对地/断口 Power frequency withstand voltage (1min):(wet) (dry) white, right / fracture	kV	42/48
11	雷电冲击耐受电压(峰值)相间、对地/断口 Lightning impulse withstand voltage (peak) and white, right / fracture	kV	75/85
12	二次回路1min 工频耐压 Secondary circuit 1min power frequency withstand voltage	kV	2

外形及安装尺寸图 Outline dimension and installation drawing



ZW32-12M户外永磁高压真空断路器

YN-3S系列户外永磁高压真空断路器

YN-3S series of outdoor high voltage vacuum circuit breaker permanent magnet



概述 Product Structure

YN-3S-12系列户外真空永磁断路器是本公司综合国内外先进技术、博采众家之长、采用全新设计理念、运用高科技手段、最新研制的新一代柱上真空断路器。该产品既可作为35kV变电所主变10kV出线的开关，也可作为配电网的柱上开关，和本公司生产的控制器相结合便可方便实现控制、保护、测量、通讯，是实现配网自动化和小型化变电所的首选设备。

主要特点：采用永磁机构，使用部件大量减少，合闸功率大幅度减小，稳定可靠，无需定期维护保养；采用进口户外环氧树脂作为外绝缘材料，重量轻、寿命长达15年以上，耐候性好，无油、无SF₆，符合环保要求；动作时间短，能快速切断故障，保护配合方便灵活；选用外置PT作为电源，无须外接电源即可实现电动操作；选用专用遥控器可实现遥控操作，无须上杆即可进行停送电操作；选用一体化设计的高压隔离开关，使结构紧凑，安装检修非常方便。

YN-3S-12 series of permanent magnet outdoor vacuum circuit breaker is the Company's consolidated foreign advanced technology, public gambling house long, with a new design concept, the use of high-tech means, the latest development of a new generation of column vacuum circuit breakers. The product can be used as the main transformer 10kV Substation 35kV switch outlet, but also as a distribution network of column switch, and this combined with the company's controller can facilitate the realization of control, protection, measurement, communication, is to achieve preferred equipment distribution network automation and miniaturization substation.

Main features: Magnetic actuation (permanent magnet) institutions so that a significant reduction in parts, greatly reducing the switch on the power, stable and reliable, no regular maintenance; imported outdoor epoxy resin as outer insulation material, light weight, long life more than 15 years, the weather is good, no oil, no SF₆, comply with environmental requirements; action time is short, fast cutting fault protection with the convenience and flexibility; use solar or CT as a power, no external power supply electric operation can be realized; use special remote control enables remote operation without lever stop transmission operation can be carried out; the selection of high-voltage isolation switch integrated design, compact structure, convenient installation and maintenance.

使用环境条件 Service Condition

1. 工作环境温度：-40℃~+60℃

2. 工作环境湿度：0-95%

3. 工作环境阳光辐射：≤1.1kW/m

4. 风速不超过35m/s(相当于圆柱表面上的700pa)

5. 污秽等级：IV级

6. 覆冰厚度：≤10mm

7. 地震烈度：≤8°

1. Working temperature: -40 °C ~ + 60 °C

2. Operating humidity: 0-95%

3. The working environment of solar radiation: ≤1.1kW / m

4. The wind speed does not exceed 35m/s (equivalent to 700pa on the cylindrical surface)

5. Pollution Level: IV grade

6. ice thickNess: ≤10mm

7. seismic intensity: ≤8 °

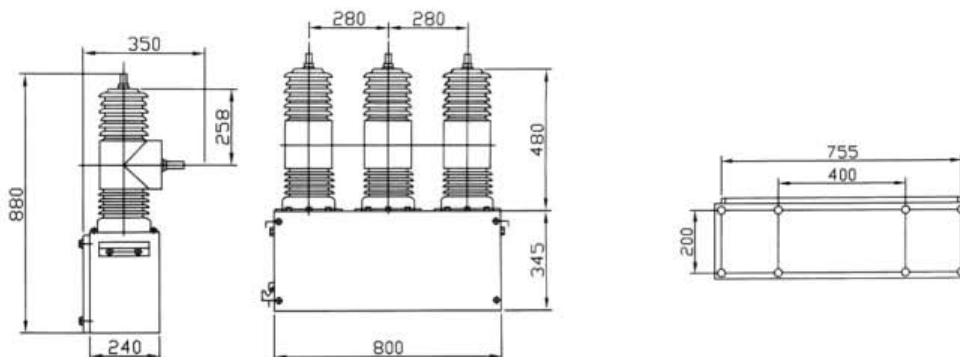
型号及其含义 Model description



主要技术参数 Technical Parameters

序号 No.	名称 Name	单位 Unit	数值 Data
1	额定电压 Rated voltage	kV	12
2	额定电流 Rated current	A	630/1250
3	额定频率 Rated power frequency	Hz	50
4	额定短路开断电流 Rated short-circuit breaking current	kA	20
5	额定峰值耐受电流 (峰值) Rated withstand current(peak)	kA	50
6	额定短时耐受电流 (4s) Rated short-time withstand current(4s)	kA	20
7	额定短路关合电流 (峰值) Rated short-circuit making current(peak)	kA	50
8	额定短路电流开断次数 Rated short-circuit breaking time	次Secondary	30
9	机械寿命 Mechanical life	次Secondary	10000
10	工频耐受电压(1min) Power frequency withstand voltage (1min)	kV	42
11	雷电冲击耐受电压(峰值) Lightning impulse withstand voltage (peak)	kV	75
12	主回路电阻 Main circuit resistance	$\mu\Omega$	≤ 120
13	电流传感器变化 Current sensor changes		30~1250/5

外形及安装尺寸图 Outline dimension and installation drawing



YN-3S户外高压真空断路器外形尺寸图

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